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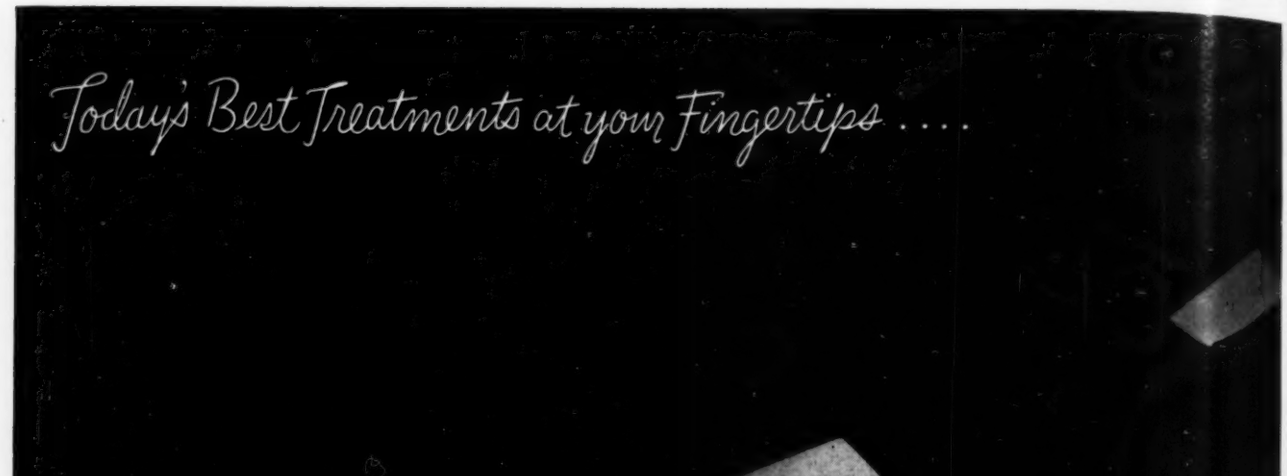

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AN EFFECTIVE COMPREHENSIVE PROGRAM FOR GERIATRIC PATIENTS

Murray B. Ferderber, M.D., Pittsburgh
and
Gerard P. Hammill, M.D., Woodville, Pa.

The problems of our aging population, both in and out of institutions, are becoming multitudinous. A crisis is developing because of the increased numbers who need care. The average life span grows longer with each passing year, thereby adding more and more to the older populace. Any effective attack on the problems of the aging must include physiological, psychological, social, and economic surveys in order to plan an adequate and comprehensive program. If we, as physicians, can agree that sound medical care must include the triad of diagnosis, definitive treatment, and finally rehabilitation, the problems of the aging present themselves more clearly. This report is not meant to deal primarily with definitive care and diagnosis but rather with rehabilitation and its ramifications. However, one must remember that rehabilitation cannot always be successfully applied to the geriatric patient. Age may not be disabling unless the degenerative processes of normal wear and tear exert sufficient influence to remove a person from a useful economic existence. Long-term (chronic) illness may exert its worst effects on the aging patient, adding untoward complications to the normal process of growing older. For purposes of clarity and simplicity, the geriatric patient will be discussed with regard to the person's own home, general hospitals, and public institutions.

The general practitioner occupies the leading role in the care of the disabled aged. Recovery will, in many cases, be determined by the application of the triad of diagnosis, definitive care, and finally rehabilitation.[1] When an older person becomes ill he is regarded as a special medical problem, but our experience forces us to disagree with this concept. It is true that deterioration, muscular, skeletal, chemical, and even mental, is more alarmingly rapid in the older patient than in the younger. To offset this deterioration, however, the medical philosophy of "early ambulation" is applied. We use the cliché that "not rest but restoration" is the wisest rehabilitative measure, the implication being that the latter definitely means movement, graded to physical capabilities, and not rest, which frequently leads to bodily as well as mental disintegration. The many antibiotics and surgical procedures developed in the past are of little value unless the human mechanism can be energized or motivated to movement. Should hospitalization be necessary (to be determined by the general practitioner), a train of events follows that can lead ultimately to either reunion with one's family or, unfortunately, transfer to a facility for the aging, either private or public. After admission to a general hospital, standard routines follow, but all too often they are static and not dynamic in operation. In many of our smaller institutions, for instance, departments of physical medicine are nonexistent, and, in a great number of the larger ones, insufficient stress is placed on the necessity for an active program. Much of this stagnation stems from lack of knowledge and understanding of the needs of older patients, inasmuch as we have but lately become cognizant of our responsibilities. It is a healthier state to feel that our concepts of progressive restoration of the geriatric patient have taken firm root, and we no longer fear untoward consequences of steady movement toward ambulation. Formerly, medical personnel "waited out" the geriatric patient's progress; at present we assist in bringing about those desired changes through improved techniques.

AMBULATION

In the Allegheny County Institution District, with hospitals at Woodville and Mayview, Pa., the problems pertaining to the geriatric patient became so serious that the administration decided that an energetic program was needed. This program was based on activities in the armed forces during World War II, although none of them were with an older group. Frequently, such questions arose as: "Were these oldsters amenable to active exercises?" "Could an older human mechanism adapt itself to physical movements previously reserved for the young?" "Would age permit an understanding of the pur-

Assistant Professor of Medicine, School of Medicine, University of Pittsburgh. Consultant in Physical Medicine and Rehabilitation to Allegheny County Institution District Veterans Administration Hospital, Aspinwall, Pa. (Dr. Ferderber); and Director, Allegheny County Institution District, Woodville and Mayview Hospitals, Woodville (Dr. Hammill).

Read before the Section on Physical Medicine and Rehabilitation at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 22, 1954.

1. Rusk, H. A., and Taylor, E. J.: Rehabilitation, Ann. Am. Acad. Polit. & Social Sc. **273**: 138, 1951.

pose behind such a venture?" These and many other questions troubled us and our associates, who had had no previous experience with such an age group. An area 40 ft. by 50 ft. was reserved for this rehabilitation purpose, and patients already ambulatory were enlisted to help with construction of simple equipment, such as parallel bars and exercise mats.[2] One would naturally expect an influx of eager patients, anxious to better their physical state and ultimately leave the institution; however, ours was the disappointment of expectancy in that these persons, disabled as they were, stayed away, fearing loss of residence once they had improved physically. Their refusal to participate could be traced to the staff, both professional and nonprofessional, who unthinkingly propagandized against the venture, fearing that some physical harm might befall their charges. A few hardy souls, undaunted by such warnings, volunteered, and their physical restoration was under way. With much trepidation, we instituted activities intended to arouse these patients from their "institutional apathy" that had in turn infected many of those charged with their care. It is a heartwarming experience to observe these older persons, many without families and homes, working together for a common purpose, their own physical and personal redemption. In any institution, the activities of any group become known throughout, and, in this instance, the gossip of the participants was responsible for others venturing in this trial effort. Many of these persons, a cross section of the population, had been patients for periods ranging from weeks to years, and anything new was a relief from the humdrum life of institutional existence. Naturally, we expected interest to lag, but when one hemiplegic patient, confined to bed and chair for four years, stood and took a few steps, our most difficult obstacle of resistance vanished. Improvisation was, and still is, the order; varied disabilities call for simple and unique contrivances, all low in cost but efficient, and often ingenious. We might mention that there are no stereotyped apparatus; they must be geared to a person's needs, and it is amazing how the aroused interest of a patient often produces extraordinary, but efficient, "gadgets" never dreamed of.

CLASSIFICATION OF PATIENTS

When the rehabilitation staff, consisting of a therapist, one nurse, one attendant, and the authors, gained some experience and more confidence, we divided our patients according to disabilities, such as cardiovascular disease, fractures, amputation, and arthritis. In such hospitals, cardiovascular problems with neurological complications are common, and we chose the hemiplegic as characteristic of this category. Many of these patients, as well as others to be described, were a pathetic lot. Some unable to ambulate, others incontinent by habituation, they were resigned to an existence of chair or bedfastness, lingering in the compromise between living and dying.[3] Many were hypertensive and disinterested in their surroundings, which were none too attractive. Some had deformities caused by neglect or lack of knowledge; others were depressed to the point of becoming vegetating organisms without hope. Our approach to such problems was effective in its simplicity. No attempt was made to compel the patients to participate in this program. We felt that if the product (physical restoration) is sufficiently attractive, patients will buy it.

As stated above, the greatest number of patients in our program have vascular problems. From our observations in a public institution, it is obvious that many originally were physical flotsam, hidden in back rooms, burdening their families, or in general hospitals in excessive numbers, making a problem not only for the medical and administrative staffs but for the families of these persons as well. For all practical purposes we have divided these, as well as other groups, into four categories: (1) those patients who have accepted their physical misfortune and who have willingly, or by necessity, striven to make themselves physically or economically independent, within the limitations set by their disabilities; (2) those who by pity draw to themselves excessive attention from families and friends and who, through wielding the "club of disability," become the tyrants of the household; (3) those who are resented by the family for having caused some disruption in the household and are consequently neglected or hidden in the back rooms; and (4) those, steeped in the conviction of their own limitations, who resist any attempt to better their circumstances.

METHODS OF THERAPY

We realize, of course, that there are limitations to the results that might be achieved and that total rehabilitation is not always possible. On the other hand, some degree of restoration can be achieved through returning many of these persons to some physical independence, either at home or within the institution. Such patients represent varied personalities, with diverse disabilities that must be recognized, weighed, and cared for. It is our contention, therefore, that rehabilitation as practiced in large institutions, hospitals, and homes is in reality mass physical restoration of a group of patients who have hitherto inadvertently been deprived of it. It may be accepted as axiomatic that the definitive professional care, both medical and nursing, immediately following disability is very important. The prevention of deformities, by methods such as care of the skin and proper diet, is extremely vital should the patient survive his physical insult. Exercise is frequently used and may embrance anything from deep breathing to "commando tactics." Since one cannot always engage the services of a competent physical therapist, it is reasonable to use a bed program consisting of movement of the involved as well as the unaffected parts until the patient is able at least, even with assistance, to sit up, first in and then beside the bed. The effect here frequently is more emotional than physical, since it offers convincing proof to the afflicted that there is an untapped physical reserve within him that needs only developing to assist in his restoration. This exercise period may vary from a few minutes to greater periods in and then out of the bed. Such activity, even so slight, aids in eliminating the most troublesome complaint of the chronically ill geriatric patient, "incontinence by habituation."[4] This

2. Ferderber, M. B.; Hammill, G. P., and Kraft, A.: Physical Restoration of the Chronically Ill and Aged, Geriatrics 8: 186, 1953.

3. Keys, A.: Deconditioning and Reconditioning in Convalescence, S. Clin. North America 25: 442, 1945.

4. Ferderber, M. B.: Low-Cost Rehabilitation of Institutional Patients, to be published.

expression is applicable to cases involving prolonged bedfastness, after which the patient loses the stimulus to evacuate either intestine or bladder. Apparently this is not based on any disease, since such patients regain normal habits of evacuation once they are ambulatory.

Exercise.—It is unthinkable to expect that a person with a "stroke," whether aphasic or unconscious, can ask for a bedpan or urinal. But, when consciousness returns, such training must begin immediately, coupled with an explanation to the patient of his diagnosis so that the problem is faced immediately. An excellent example of this is furnished by experiences at Mayview, one of the hospitals of the Allegheny County Institution District. About 40 to 50 patients, virtually all of whom had cardiovascular disease, were in the female infirmary, in an environment made unpleasant by the strong odor of human excreta. These persons were ordinary human beings in various stages of deterioration and were, in our experience, some of the most difficult that one could handle. It is interesting to cite that each patient used an average of 11 pieces of linen every 24 hours. Since this "new or third phase of medical care" offered some hope, the question arose as to whether this group could receive any benefit. Twelve patients, the worst, were chosen by the attendants and transferred to a large, airy, light bay of this building, named the "round room." These persons had been out of bed only for the most necessary procedures. Most of them had forward-flexed heads from sagging springs, severe obesity, and extremely poor positioning. All but one were victims of "stroke" and hypertension, with almost every conceivable deformity resulting from disuse and negligence. It is our belief that this same picture could be duplicated in many of our "poor houses," public or private, throughout the country.

Physical and laboratory studies were made and recorded, and what looked like a hopeless task was begun. Such simple means as the rope attached to the foot of the bed and overhead pulleys were supplied and made within the institution itself. The unusual situation of a patient sitting up for a few minutes each day was started, but this was very difficult because of an inherent fear on the part of the patient. Each day a few minutes more were added, until this apathetic hopelessness, once so obvious, changed to an occasional smile, and a few words were finally spoken, until the patients resembled more of the human than the vegetating animal. Our next venture was bedpan training, timing intake with output until a noticeable habit-pattern resulted. The most interesting experience was a drop in the linen replacements of 70% per day in the first four months, which, in terms of items, meant about 2 pieces of extra linen per day as contrasted with 11 used previously. Eventually, as their courage mounted, the patients themselves tried movements of various parts of the body. Exercises were increased within tolerance of the patient until the great step of moving from bed to chair was tried. Here again the same routine from minutes to hours was inaugurated, and actually there was an air of enjoyment among these physical derelicts. Gradually other activities, such as one-handed hair arranging and listening to radio and television, were added, until these persons began to live what could be construed as a normal existence.

Deformity Correction.—Now that a habit-pattern was established, the more difficult problem of correcting deformities was next. Splints, stretching, pulleys, and finally surgery were used when needed. At this point, we offer a tribute to our orthopedic colleagues, who have been, in our opinion, most helpful in this attempt to create a new life for those persons. With the simply constructed parallel bars and pulley systems so well known in the field, standing and walking, when the patient was able, was started. Practical devices were added when feasible, and it was a gratifying sight to observe persons who had been incarcerated in bed shuffle or limp to the dining room, a place they had never seen since entering the institution. Incidentally, it is interesting to note that no changes in blood pressure, even in hypertensive patients, were noted as a result of such activities; nor can it be said that even one death occurred during or as a result of this physical restoration. With encouraging results, but with criticism that small institutions did not have space for such activities, the "round room" was dropped. Instead all wards, for men or women, were equipped with simple rehabilitation facilities. This not only conserved space, but the presence of the equipment offered a challenge to these older persons, one that we believe was a motivating factor in the success of the "ward-rehabilitation" combination.

Another group of persons commonly seen in institutions consists of those with fractures of the lower extremities, particularly of the femur. It has not been too many years since a fractured hip in an older person resulted frequently in death, but this is not as often the case since the advent of antibiotics, more advanced orthopedic techniques, and the practice of early ambulation. Orthopedic surgeons have helped to eliminate or reduce the deformities that are so common in the aged, for they have developed better mechanical devices and a better philosophy for physical movement to avoid the danger of too much rest. In our opinion, the primary justification for early surgical fixation is early ambulation.[5] The aged amputee, in the majority of cases, has lost one or more parts of the body because of such problems as circulatory difficulties. Very few enter the institution wearing a prosthesis, although some are supplied with one by interested families or friends before admission. They had no instruction in gait training, nor were any other professional helps used in preparing them for ambulation. It must also be remembered that many lose their limbs within the institution itself. It is rather interesting to observe that the amputee, like any other disabled older person, is much more willing and anxious to ambulate than one would imagine. With respect to lower extremity amputees, we have propounded one inflexible rule: Amputees must be able to use crutches before they are given any consideration for a prosthesis. It is time that we realized that the addition of an artificial limb, whether to an old or young patient, is no guarantee of ambulation; there must be proper preparation, far more important than hitherto realized, correct fitting, and gait training.

There were, of course, a few patients who had no desire to move about, even though an artificial limb might make them physically independent. With these patients

5. Ghormley, R. K.: Abuse of Rest in Bed in Orthopedic Surgery, J. A. M. A. 125: 1085 (Aug. 19) 1944.

we have found that insistence is of no value. One usually observes in groups that winning over one patient, even by subversion, may act as an example to the others. Persons in public institutions are curious and by the same token want what their fellow patients have. There are many, however, for whom ambulation is out of the question. So that they do not feel limited by exclusion, an exercise program is set up to enable them to use both hands to grasp a bar affixed in front of them while they are sitting in a chair; thus they have the experience of coming to an erect position several times daily. This, while in a sense a gesture of hopelessness, still adds some proportion to their physical dignity.

Medication and Rehabilitation.—Another group consists of arthritic patients, suffering from degenerative, rheumatoid, or mixed types of the disease. During the first few years of the existence of this program, most of our patients were not given steroids, as they were not yet in clinical use. We had only a program of physical restoration with which to help them. It was obvious from our experience that absence of body movement was responsible for greater deformity and incapacity, but, even with logical evaluation, we wondered if any of these persons might ever ambulate. Surprisingly enough, however, gentle, graded exercises geared to tolerance so energized these patients that eventually many of them were capable of self-care within the institution; others were fortunate enough to return to their homes, when such existed. Since the advent of steroids, the long-term arthritic patient is much more benefited than ever before in our experience. With the reduction in the costs of medicaments and greater ability on the part of personnel, we have prevented, whenever possible, the imprisonment of these persons in bed or wheelchair. When feasible, explanations regarding their specific disability were given so that they could intelligently understand not only their limitations but their abilities, present and potential, which, when put to work, redound to their physical benefit. The most interesting fact in this group is that there were more discharges from our hospitals in the 50 to 70-year-old group than in the younger age groups. Although we are not expertly versed in rheumatology, it would appear that activity rather than rest is still the byword. We feel that rest often leads to physical as well as to mental deterioration.

Our cross section of cases is no different from that in any other similar public institution. We have our share of multiple sclerosis and other neurological cases. There is no remedy for multiple sclerosis, but retaining some degree of function by stretching and tolerable exercises has reduced the extent of hopelessness, at least during the phase of latency. Like other hospitals, we used every modern treatment in our armamentarium without success, yet we feel that it is our professional obligation to continue, ineffectual as we might be. Any deviation from this rule would place us in the same category as those who shun such persons as the back-room chronically ill patient, the "stroke" patient, and the amputee. Until recently, few medical students were taught the importance of rehabilitation, but, in this area, interns and residents have gained a new appreciation of the chronically ill and/or geriatric patient. Unwillingness to consider earlier body movement makes not so much for neglect as for unnecessarily prolonged confinement to a hospital bed. The deterioration leads to incontinence, decubitus ulcers, emotional and morale problems, and undue hardship in nursing, dietary, and even laundry facilities. With these problems multiplied, as they frequently are, transfer to another facility variously labeled "county hospital" (or home), "poor farm" (house), or "chronic disease or domiciliary institution" follows. Much of this excessively prolonged hospital stay might have been avoided by a few simple measures that are now in effect.

REHABILITATION IN THE HOME

Interns, residents, and nursing staffs now realize that the prevention of deformity is important in medical management and is now considered an integral part of definitive medical care.[6] It is our contention that the general practitioner is as much obliged to prescribe preventive as therapeutic measures. An example of the changing philosophy is illustrated in the case of a hemiplegic who is also a diabetic. Before discharge he was given explicit directions regarding his diabetes but unfortunately received little in the way of "stroke management." The situation has now improved to the point that both diabetes and the "stroke" are explained and the family and patient are briefed in management of these dual problems. An important connecting link between hospital and home is a social service department that automatically arranges for visiting nurse services. The program of physical restoration can continue with the family indoctrinated by the visiting nurse. Through a system of group instruction given by the physician, physical therapist, physiatrist, and social worker, our visiting nurses locally have become quite adept in devising equipment that might transform the home bed into a quasi-hospital bed. Therefore, recovery is continued through this productive convalescence. It is our belief, although no figures are available at this time, that this method of liaison between hospital and home, through the visiting nurse, has resulted in a reduction of hospital readmissions. Unfortunately, even though directions have been clearly given, many families do not, or will not, follow through. The deterioration previously prevented now becomes rapid. This inability to carry on may be due to economic stress, to the impossibility of keeping a wage earner out of circulation, or to the resistance of the older patient. Eventually such patients, usually by necessity, are admitted to public institutions. This transfer from the home and family environment carries a strong emotional impact, particularly one of maladjustment. Before the inauguration of the rehabilitation program in our county hospital, the patient was passed through the admission to one of the "permanent wards" that are actually sick bays never planned for the chronically ill and aging. Physical and mental deterioration had become an accepted part of the patient's makeup and was considered normal for persons at this age, particularly in public institutions.

EVALUATION BOARD

A contrast to this situation is offered in the present operation of the public institution from which most of this information has been obtained. Upon entering, the

6. Shands, A. H., Jr.: Medical Rehabilitation: The Doctor's Responsibility, read before the Medical Society of the State of Delaware, Oct. 8, 1946.

patient is brought to the admission ward, where history, physical examination, and other data are procured, evaluated, and then referred to the section on physical medicine and rehabilitation. An evaluation board, comprised of staff physician, social worker, aide (orderly-attendant), and physiatrist meet at the bedside so that the aggregate results of the team approach are immediately put to work. The proposed program is explained to the patient, even to the extent of discussing such problems as decubitus ulcers and deformity, so that, with some degree of intelligent cooperation, the patient is made a part of the working team. The physical therapist becomes the overseer as the representative of the evaluation board, and each movement is explained not only to the patient but to the aide into whose hands many of these persons are passed. Where any large group is concerned, as in the Allegheny County Institution District (1,800 to 1,900 patients), there is always insufficient professional help commensurate with permissible budgets. Since our venture is one intended for mass physical restoration of a group of patients hitherto uncared for, we decided to use the nonprofessional, the aide or orderly-attendant. Those familiar with public institutions realize that these persons rarely receive any credit for their efforts, although they spend more time with the patients than do any other personnel and perform difficult and often menial tasks. After careful screening of these workers, informal rotation courses were instituted, so that the orderlies spent some time working in the various departments and wards. These same nonprofessionals learned simple techniques of bed exercises and movement to and from bed, all based on previous instruction by the physical therapist or physiatrist. It is heartening to observe the expertness with which these workers handle the most difficult patients. It is axiomatic in our experience that the elimination of a bedpan is as important to the aide as to the patient. We believe that the aide or orderly, as a nonprofessional, occupies the same status as the practical nurse, whose advent in the field of medicine has been of great help.

The evaluation board meets frequently, and, at each session, problems requiring consultation, irrespective of the specialty, are discussed and resolved as quickly as possible. In this connection, a unique system of bilateral cooperation between this public facility and private consultants or hospitals has been in operation for several years. One of us (G. P. H.), as director, has given authority to staff physicians to use consulting help where needed, without the necessity of any additional authorization. This collaborative effort is enhanced by the public institution sending its surgical, or other, cases to the consultant's hospital should surgery or other specialized care be needed, since it is felt that any expert performs more efficiently at his own base of operations.Thus it becomes quite obvious that this is truly a two-way street, with the public hospital at one end and the private at the other. Also, there is an arrangement whereby the institution district takes the chronically ill or aged from the private hospital, which in turn provides special care not readily available at the former. Lest there be any misunderstanding, the county government pays the private hospital and the consultant for their services, a good example of public and private enterprise in action.

The social service department maintains liaison with the family, pointed toward the eventual discharge of the patient to the home and helping in the minor changes necessary to maintain the patient in a reasonably comfortable state. This then calls for an explanation of the term so frequently used, self-care, which includes the care of one's person and toilet so necessary to dignity, the ability to handle housekeeping needs of the area in which the "repatriate" lives, and participation in some few useful activities about the house in general. It is true that a great number of these persons will never leave the institution, but at least they will be able to visit with one another, and through such social intercourse, and the addition of social diversions, the apathy of their circumscribed existence is offset.

RECREATION AND DIET

Previously, recreation was rarely considered good therapy for the geriatric patient. When one considers that middle-aged persons are constantly busy either maintaining their own economic standards or providing education for their children, one realizes that during this period there is little time for leisure; however, in later and inactive years, there is too much leisure without purpose, which in turn becomes a liability rather than the asset it was once presumed to be. This gap must be filled with recreational activities that can assume any form that will fit the persons concerned, whether they be ambulatory or not. It is regrettable that in our two county institutions our attempts in the recreation field have been fruitless, except for an occasional motion picture or visits by church or other small groups. The Friday afternoon sessions of card playing and simple games, together with watching television daily during reasonable hours, have acted as therapy for which there is no medical substitute. We are aware, after these years of work with the older person, that the pleasures of congenial participation are of much more importance than we had realized. However, this deficiency will be corrected in the very near future, for at this time we are endeavoring to engage a recreational director, which is not easy in view of the fact that there is a dearth of such personnel trained in helping the geriatric patient occupy his time for his own gratification.

We wonder what constitutes the factor of human reserve in the older patient, particularly those who are disabled or inactive. Obviously, we have no yardstick or instrument for the measurement of either latent possibilities or talents. It would appear from the experiences of the past eight years that we have barely tapped the human reserve of those who have been incarcerated in beds and chairs through no fault of their own. We observed early in the program that many of our "stroke" patients had been bedridden for years yet were able gradually and eventually to leave their "prisons." One cannot help wondering how, after their reserves of activity had lain dormant for so many years, these persons, when called on, could still perform certain acts of normal movement. Sometime this year, a study of the effects of diet on the geriatric patient will begin. Much has been written on this facet of care for the aging, and we shall, at least, have the benefit of such studies. In our experiences, there are no preconceived ideas of what diet might produce. We are approaching a point where we must, and do, recog-

nize the importance of food, particularly in persons whose processes have been slowed down through the years. Although it is accepted as good practice that one should provide a high-protein, low-fat diet for the older person, we do not feel qualified at this time to say anything further, since the problem of feeding 1,800 or more patients belongs in the realm of dietetics, with which we have no experience.

PROGRAM COORDINATION

Early in this report we spoke about the team approach and the triad, indicating the necessity for good liaison between all personnel. Experience of one of us (M. B. F.) with the chronic disease program at the Veterans' Administration Hospital in Aspinwall, Pa., has brought to our staff the recognition of one important fact: that, while diagnostic and definitive care are handled adequately by the medical specialties associated with a case, the eventual coordination of a geriatric program is basically the responsibility of the physical medicine and rehabilitation personnel. This can be explained by the simple experience of a reduction of about 50% in the number of patients who were formerly fed by hospital personnel but who, after being taught by the physical medicine personnel, were able to proceed on their own, releasing staff members for the care of the more seriously ill. Such simple activities as climbing stairs, boarding public conveyances, dressing and undressing, and caring for one's toilet are the responsibilities of the same group, persons who must know the means of putting into useful activity those parts that for a long period were kept in useless inactivity.

FEATURES EMBODIED IN A NEW HOSPITAL

On might ask what the implications are in this discussion of the geriatric patient. Many of our public institutions are not pleasant places, since they are being used for purposes for which they were never intended when originally built. The attitude of public officials concerned with the medical care of the chronically ill and aging has undergone a radical change, and for the better. Despite the problems of budget, public officials are turning to the idea that institution costs must be increased for more efficient care. To this end, the commissioners of Allegheny County and their staffs have been working toward construction of a new hospital facility for the chronically ill and aging. Virtually every modern, or near modern, institution has been visited to obtain the best ideas toward new planning. This new facility will attempt to embody the following features, which should aid us in providing good medical care as well as practicality and long-range economy: (1) a complete floor of the hospital devoted to rehabilitation services, with integral ward units throughout; (2) a modified colony plan carried out in the ambulant section, providing for the congeniality of small groups despite the immensity of the project; (3) a rolling terrain used to provide direct ground access for 1,100 patients; and (4) a centrally located recreational center, highlighted by a multilevel auditorium that can be entered from four different floors without the use of ramps, stairs, or elevators. Recreational areas throughout will be provided, since lack of such diversion in the present institution makes our situation poor. A chapel for all denominations will be provided for patients and personnel of the institution. All rehabilitation facilities will be made available to every new patient, even though some of our older patients may not be capable of actively participating.

The care of our "oldsters" is reflected in the results that certainly have justified the efforts expended: 23% were discharged to their own homes and/or gainful occupation; 45% were improved to the point that they became ambulatory within the institution; 12% were subjectively improved, but we have no tangible standard of objectivity to evaluate these; and 20% showed no tangible improvement. With the younger group such figures may not appear outstanding, but they are an indication that there remains within the geriatric patient a fund of ability that, if developed, can lead frequently to physical and occasionally to economic independence and often to reunion with their families.

COMMENT

In view of our experiences over the past several years, and with some knowledge gained of the problems and ideas for the aging population, we have propounded some conclusions regarding the care of the geriatric patient, at least in public institutions. The construction of new institutions (hospitals) for this purpose must be planned on a broad base to meet ever-changing economic and physical states of our future inhabitants. General (private) hospitals must meet the situation squarely, in that administrative as well as professional personnel (physicians, nurses, technicians, and therapists) will be imbued with the philosophy that the chronic and aged cannot be left to vegetate but must be moved or ambulated as quickly as feasible. Both patient and family must be briefed at the time of hospital discharge. Social services can forge the links between hospital discharge, patient and family, visiting nurses, and finally public facility. The "back-room chronic" must be released from benign incarceration through enlightenment of the family by medical and allied workers. A philosophy of common decency by public institutional administrators that the patients' needs, rather than the whim or convenience of the operating personnel, should be the anchor of sound medical and social care.

A few chosen members of the staff (physicians, nurses, technicians, and therapists) should constitute a cadre whose additional components must consist of nonprofessionals, such as the aide (orderly-attendant), whose status and dignity should be enhanced by their own accomplishments. After all, they become either the confidents or the keepers of the institutional occupants, indicating freedom or imprisonment. Rehabilitation or physical restoration programs must be simple, without facade or embellishment to fit the public purse, thus aiding the budget makers to care for more than animal needs. Rehabilitation equipment should be placed within the wards proper, saving experienced personnel, space, and transportation, yet inculcating in the patient, by challenge and competition, the drive to leave the bed, often a man-made prison.

Medical specialties should be used with good purpose for needed services over and beyond institutional personnel capabilities. Existing public resources, such as the bureau of vocational rehabilitation, the Visiting Nurses

Association, and volunteer groups, should be used to supplement facilities at the institution. There should be a closer liaison with family and friends of patients after admission to keep the former apprised of progress, or lack of progress, thus speeding the patients' final disposition. Activity, recreational as well as physical, in tolerated, enjoyable "doses" will provide surcease from morbid monotony, will give a measure of reasonable contentment, and, above all, will make the lot of attending personnel as well as that of the chronically ill and aging more pleasant. Finally, since an effective comprehensive program for geriatric patients is basically a medical responsibility, it needs not the talents of any special group but the aggregate effects of a team approach, professional and nonprofessional.

5722 Fifth Ave. (32) (Dr. Ferderber).

SOURCES OF UPPER ALIMENTARY TRACT HEMORRHAGE IN CIRRHOSIS OF THE LIVER

David C. Fainer, M.D.
and
James A. Halsted, M.D., Los Angeles

Hemorrhage from the upper alimentary tract has been reported to occur in from 21 to 28% of patients with Laennec's cirrhosis.[1] Furthermore, hemorrhage is the most frequent cause of death in patients with cirrhosis, being directly or indirectly responsible for 20 to 50% of deaths.[2] Since several potential sources of hemorrhage may exist in patients with cirrhosis of the liver, it is often a problem to determine the cause of the bleeding. This study was undertaken to determine the incidence of bleeding from various sources.

METHODS

The case records of 200 patients with a clinical diagnosis of Laennec's cirrhosis were reviewed. These patients had been hospitalized at Wadsworth General Hospital between July, 1950, and June, 1953. The incidence and sources of bleeding were determined. Episodes of hematemesis or melena in the distant past were not included, the analysis being confined to episodes of upper alimentary tract hemorrhage actually observed at this hospital. Instances in which insufficient clinical evidence of cirrhosis existed and in which cirrhosis was secondary to biliary obstruction or chronic passive congestion were not included. The source of bleeding was determined on the basis of either anatomic evidence found at operation or postmortem examination or by clinical evidence found at x-ray examination, gastroscopy, or esophagoscopy, or combinations of these procedures. Since esophageal varices may be present but not grossly demonstrable at postmortem examination, hemorrhage was recorded as due to esophageal varices if no other site of bleeding could be demonstrated and dilated esophageal veins could be seen microscopically. In addition to the analysis of clinically diagnosed cirrhosis, 1,278 consecutive autopsies, performed during 1949 and 1950, were reviewed in order to determine the incidence of peptic ulcer in patients with Laennec's cirrhosis.

RESULTS

Hemorrhage from the upper alimentary tract occurred in 76 or 38% of the 200 patients with a clinical diagnosis of Laennec's cirrhosis. In these 76 cases the lesion responsible for bleeding was demonstrated in 66, anatomically in 54 and on clinical evidence only in 12. In three cases, more than one lesion that might have been the source of bleeding was demonstrated, but it could not be determined which was the actual cause; in the remaining seven cases no cause could be found.

The sources of bleeding are shown in the table. Esophageal or gastric varices were proved to be responsible for the bleeding in 61.8% of the 76 patients. Peptic ulcer and gastric erosion were shown to be the cause of bleeding in 23.7%. In 22 of the patients, or 29%, more than one lesion that could have been the source of bleeding was demonstrated. For example, both esophageal varices and peptic ulcer were demonstrated in 12. Varices were proved to be the source of bleeding in 6 of these 12 patients and peptic ulcer in 4. In the other two patients, it was not determined which of the two lesions actually was the cause of the bleeding. No patient was found in whom it could be shown that the bleeding came from hypoprothrombinemia alone; however, deficient blood coagulation undoubtedly was a contributing factor in some of the patients.

In the review of the 1,278 consecutive autopsies, Laennec's cirrhosis was found to be present in 94 cases, or 7.4%. Peptic ulcer was present in 17% of these 94 cases of cirrhosis. It was present in 10.6% of the other 1,184 cases in which there was no cirrhosis. The difference is statistically significant (P — less than 0.05).

COMMENT

As noted in the table, gastric and duodenal ulcers were the source of upper alimentary tract hemorrhage in 18.4% and gastric erosions in 5.3% of 76 patients with Laennec's cirrhosis in whom hemorrhage occurred.

From the Veterans Administration Center and the Department of Medicine, School of Medicine, University of California Medical Center.

1. (*a*) Fagin, I. D., and Thompson, F. M.: Cirrhosis of Liver: Analysis of 71 Cases, Ann. Int. Med. **21**: 285, 1944. (*b*) Douglas, B. E., and Snell, A. M.: Portal Cirrhosis: Analysis of 444 Cases with Notes on Modern Methods of Treatment, Gastroenterology **15**: 407, 1950. (*c*) Ratnoff, O. D., and Patek, A. J., Jr.: Natural History of Laennec's Cirrhosis of the Liver: Analysis of 386 Cases, Medicine **21**: 207, 1942.

2. Evans, N., and Gray, P. A.: Laennec's Cirrhosis: Report of 217 Cases, J. A. M. A. **110**: 1159 (April 9) 1938. Halsted, J. A., and Fainer, D. C.: Symposium on Cirrhosis of Liver: Clinical Aspects of Cirrhosis: Observations on Hemorrhage and Hepatic Coma, Am. J. Gastroenterol. **21**: 18, 1954. Douglas and Snell.[1b] Ratnoff and Patek.[1c]

Furthermore, the incidence of peptic ulcer in persons with cirrhosis has been found to be significantly greater than the incidence in those without cirrhosis.

Corollary observations have been made by others. Baronofsky and Wangensteen [3] demonstrated that erosions and ulcers were more readily provoked with histamine in animals when the animals had experimentally produced portal hypertension. They believed the acid-pepsin factor to be of primary importance in the causation of hemorrhage associated with portal hypertension. Lipp and Lipsitz [4] reported four patients with fatal cases of hemorrhage in Laennec's cirrhosis in whom at postmortem examination the source of bleeding was found to be a peptic ulcer in three and a gastric erosion in the other. These same authors surveyed a group of autopsied cases and found evidence of peptic ulcer in 11.5% of cases with portal cirrhosis, while only 6.6% of control cases had evidence of peptic ulceration. Palmer and Brick [5] studied a group of patients with cirrhosis who had a history of hemorrhage. Esophageal varices were demonstrated in 80%, but the incidence of peptic ulcer and other potential sources of bleeding was high in both the group with varices and the group without varices. An analysis of their figures would seem to indicate that about 30% of their patients had more than one potential source of bleeding in the esophagus, stomach, or duodenum. This is remarkably similar to the 29% found in this study.

Source of Upper Alimentary Tract Hemorrhage in Seventy-Six Patients with Cirrhosis

Source of Bleeding	Patients	
	No.	%
Esophageal varices	45	59.2
Gastric varices	2	2.6
Peptic ulcer	14	18.4
Gastric erosions	4	5.3
Hiatus hernia	1	1.3
Undetermined *	3	3.9
No cause found	7	9.2
Total	76	100.0

* More than one lesion of the upper alimentary tract was present. It could not be determined which of the several lesions present caused the bleeding.

The results of this analysis have a bearing on the management of the patient with cirrhosis who suffers an episode of upper alimentary tract hemorrhage, since both the immediate treatment as well as the subsequent management will depend on the source of bleeding. Bleeding that continues in spite of esophageal tamponade must be suspected to be extraesophageal in origin. Under these circumstances, emergency roentgenography and endoscopy should be done if the patient's condition permits. When peptic ulcer is believed to be the source of bleeding, immediate surgery may be indicated if the bleeding continues or recurs. Emergency gastric resection probably was lifesaving in three patients in this series. In the recovery period of any patient with cirrhosis who has had hematemesis or melena, roentgenography and endoscopy are, of course, indicated. The immediate treatment of bleeding in patients with cirrhosis should consist of blood replacement and esophageal tamponade if bleeding does not stop promptly. In view of the high incidence of peptic ulcer, ulcer management is also indicated, either by means of antacids or by continuous gastric suction.

SUMMARY

Hemorrhage from the upper alimentary tract occurred in 38% of 200 patients with Laennec's cirrhosis. Esophageal varices and gastric varices were the source of bleeding in 59.2% and 2.6%, respectively. Peptic ulcer and gastric erosions were the source of bleeding in 18.4 and 5.3%, respectively. In 22, or 29%, of the patients in whom hemorrhage occurred, two or more lesions of the upper alimentary tract were demonstrated. Both peptic ulcer and esophageal varices were present in 12 of these 22 patients. In a series of 1,278 consecutive autopsies, peptic ulcer was present in a significantly greater number of patients with cirrhosis than in patients without cirrhosis. Determination of the source of bleeding in patients with cirrhosis of the liver is important in both diagnosis and therapy.

Wilshire and Sawtelle boulevards (25) (Dr. Fainer).

3. Baronofsky, I., and Wangensteen, O. H.: Obstruction of Splenic Vein Increases Weight of Stomach and Predisposes to Erosion or Ulcer, Proc. Soc. Exper. Biol. & Med. **59**: 234, 1945.

4. Lipp, W. F., and Lipsitz, M. H.: Clinical Significance of Co-Existence of Peptic Ulcer and Portal Cirrhosis, with Special Reference to Problem of Massive Hemorrhage, Gastroenterology **22**: 181, 1952.

5. Palmer, E. D., and Brick, I. B.: Sources of Upper Gastrointestinal Hemorrhage in Cirrhotic Patients with Esophageal Varices, New England J. Med. **248**: 1057, 1953.

Rehabilitation of the Blind.—From the point of view of rehabilitation the blind can be divided into three classes. The first are babies and young children. From the medical point of view these include infants born with congenital deformities of the eyes as well as those who develop acquired disease. Two decades ago the latter category was largely comprised of the victims of ophthalmia neonatorum; but the advent of the new antibiotic drugs in the treatment of venereal disease reduced their numbers to insignificant proportions. Latterly more than 50% of this class has been made up by prematurely born babies suffering from retrolental fibroplasia. However, now that the cause of this disease has been discovered to be an excess of oxygen given to these children in the first weeks of their life, prophylaxis in their nursing should eliminate this affection and reduce the numbers of such children by half. Of the total blind population the very young are the easiest to help. . . . The second class is comprised of blind adults, usually sufferers from injury or inflammatory diseases of the eyes, who require to be taught to adjust themselves to blindness, to learn a difficult new approach to the art of living and to become integrated into commercial or industrial life. For these a surprising range of activities lies open in which, given the necessary strength of character and training, a useful life may be assured. One of the many vocations available to these people is physiotherapy, a profession much utilized for this purpose in Britain since J. Fletcher Little first admitted the blind into the London School of Massage in 1900. The last and most difficult class to help is the aged, the sufferers from degenerative diseases of the eyes, particularly glaucoma and cataract, who form the majority of the blind population. For these, most of whom live a vegetative life at home or with relatives, little can often be done; they require help and sympathetic advice, training in reading and pastimes, and frequently financial aid.—S. Duke-Elder, M.D., The Blind and Their Rehabilitation, *British Journal of Physical Medicine,* November, 1954.

BRYANT'S TRACTION

A PROVOCATIVE CAUSE OF CIRCULATORY COMPLICATIONS

Jesse T. Nicholson, M.D., Robert M. Foster, M.D.
and
Robert D. Heath, M.D., Philadelphia

Bryant's traction for treatment of fractures of the femur in children has been blamed for few complications; these were skin irritations, decubitus ulcers, and peroneal palsy. In 1950, Philip M. Winslow [1] reported on three children who had been treated with Bryant's traction and in whom circulatory complications had developed. One child, 7 years of age, had necrosis of the skin and "paralysis below the knee." In two children, 8 years of age, there was bilateral involvement; one had residual equinovarus deformities, and the other had gangrene of the lower legs, with a fatal termination on the eighth day. Volkmann's ischemia in the lower extremity was first reported in the literature in 1935 by Jones and Cotton.[2] Their two subjects were men more than 45 years of age who had received crush injuries at the popliteal area. The first reference to ischemic contracture in the lower extremity in children was made in 1951, when Thomson and Mahoney [3] reported its occurrence after fractures of the femur in 13 children, one of whom had been treated with Bryant's traction. In 1952, Miller, Markin, and Grossman [4] reported ischemic fibrosis in the lower extremities of seven children being treated for fractured femur; in three of the seven the disturbance occurred in the normal leg. Six of the children, from 3 to 5 years old, were treated in Bryant's traction; in all six the manifestation of ischemic disturbance was observed within the first 24 to 48 hours.

This report deals with six children with circulatory complications observed by us in the past two years; all six children had been treated with Bryant's traction for simple fracture of the femur; five of the six had circulatory impairment in the uninjured leg. None of these children were observed by us while they were in Bryant's traction; we saw them after hospital transfer, five days to two years later. There appeared to be three degrees of circulatory involvement. The first was ischemic fibrosis of the muscles of the lower leg, with a residual equinovarus deformity. The clinical picture corresponded to that described by Thomson and Mahoney and by Miller and coworkers.[5] This could readily be mistaken because of the foot deformity for a peroneal nerve paralysis. There was no real sensory loss, but there were patches of sensory impairment. The ankle and foot were almost rigid. Muscle power was almost entirely lost below the knee except in the short toe flexors. Cases 1 and 2 are in this group. The second degree of involvement included the same changes as the first but included also a circumferential band of necrosis of skin and underlying muscles in the calf region, which healed with a cuff-like defect from adherent scar circling the leg. This is illustrated by cases 3, 4, and 5. The third degree of involvement included, besides the circumferential necrosis in the calf area, gangrene of the foot, as described in one of Winslow's cases.[1] This was demonstrated by case 6.

REPORT OF CASES

CASE 1.—In a boy who had sustained a fracture of the right femur on Dec. 25, 1951, at 3 years of age, Bryant's traction had been applied to both legs. On Dec. 30, 1951, circulatory changes were noticed in the left foot; the traction was removed, but no improvement in circulation occurred. The patient was transferred to Children's Hospital; on his admission, his temperature was 105.6 F, and he was disoriented. The right leg had an obvious deformity of the thigh from the fractured femur, but there was no circulatory impairment. The left leg was swollen, with blebs over the anterior aspect below the knee. There was an erythematous band, 2 in. (5 cm.) wide, about the middle of the lower leg. There was no arterial pulsation in the foot, and there was no popliteal pulse. The foot was warm, but it had no sensation; it was fixed in equinus position. Measures were instigated, such as administration of spinal anesthesia, administration of benzazoline (Priscoline) hydrochloride, and continuous intravenous administration of 5% alcohol. Coincident with these measures, the return of pulsation in the foot was noted. The foot remained in equinus position. On April 30, 1953, a heel cord lengthening with posterior capsulotomy of the ankle was done. When the patient was last observed, on Jan. 22, 1954, the left leg was ¾ in. (1.9 cm.) shorter than the right. The left thigh was 1 in. (2.5 cm.) smaller than the right, and the left calf was 2¼ in. (5.7 cm.) smaller than the right. The foot length was reduced by ¼ in. (0.6 cm.). The heel was in varus position; there was slight adduction of the forefoot, with 10 degree equinus deformity. There was no ankle or subtalar motion or action of any muscles of the lower leg except the short toe flexors. There was no disturbance of sensation in the foot (fig. 1).

CASE 2.—A boy who was first examined when 7½ years of age, on Dec. 18, 1953, had sustained a fracture of the left femur five years previously, at 2½ years of age. He had been treated in Bryant's traction. His mother had noticed that he never moved the toes of the left foot while in traction. When the traction had been removed, his left foot was in equinus position. Two years later this had been corrected by a heel cord lengthening. No surgery has been done since. The left calf is now 2 in. (5 cm.) smaller than the right. There is evidence of scarring as from skin abrasion around the leg just below the knee; the left tibia is ½ in. (1.3 cm.) short. The left foot is small, and there is 20 degree forefoot adduction. There is 10 degree midtarsal motion, no subtalar motion, and only 5 degree ankle motion. The ankle and plantar reflexes are absent. There is but a trace of power in the anterior tibial, toe extensor, soleus, and peroneal muscles. The power of the gastrocnemius muscle is zero. The posterior tibial muscle is fair; the short toe flexors are good. There is no impairment of sensation.

CASE 3.—In a 6-year-old boy who had sustained a fracture of the right femur on Aug. 7, 1953, at first the right leg only was placed in Bryant's traction. Two days later, the left leg was also put in Bryant's traction, but the boy complained of

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From the Children's Hospital of Philadelphia.

Read before the Section on Orthopedic Surgery at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 24, 1954.

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2. Jones, S. G., and Cotton, F. J.: Ischaemic Paralysis of Leg Simulating Volkmann's Contracture, J. Bone & Joint Surg. **17**: 659-660 (July) 1935.

3. Thomson, S. A., and Mahoney, L. J.: Volkmann's Ischaemic Contracture and Its Relationship to Fracture of the Femur, J. Bone & Joint Surg. **33-B**: 336-347 (Aug.) 1951.

4. Miller, D. S.; Markin, L., and Grossman, E.: Ischemic Fibrosis of the Lower Extremity in Children, Am. J. Surg. **84**: 317-322 (Sept.) 1952.

5. Thomson and Mahoney.[3] Miller and others.[4]

pain in his left heel, and after five days the traction was removed. At that time the parents noticed on the left leg "a large crust, with the skin pulled off below the knee for about 1 to 2 in. in width" and a blister over the dorsum of the left foot. A photograph was made on Oct. 29, 1953, 11 weeks after the accident and after transfer to another hospital. The right femur was united. The left leg showed a 2½ in. (6.4 cm.) circumferential area of necrosis involving the skin, fascia, and muscles at the junction of the mid and proximal thirds of the lower leg (fig. 2*A*). Distal to the area, the skin was anesthetic. The

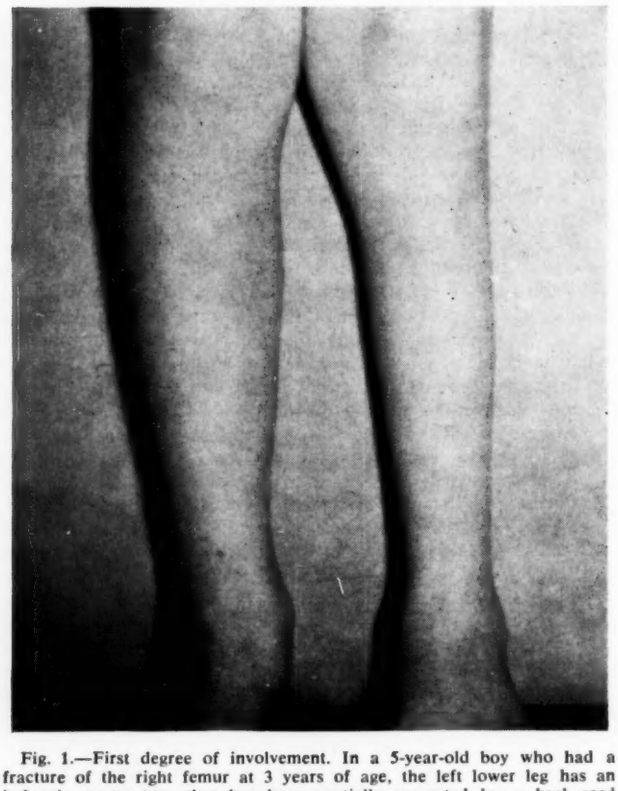

Fig. 1.—First degree of involvement. In a 5-year-old boy who had a fracture of the right femur at 3 years of age, the left lower leg has an ischemic contracture that has been partially corrected by a heel cord lengthening and posterior capsulotomy of the ankle.

foot was warm, but no arterial pulsations were obtained at the ankle. After 48 hours of treatment with wet dressings, split thickness grafts were applied. A photograph of the left leg made on Feb. 9, 1954 (fig. 2*B*), shows scarring of the calf and an equinovarus deformity of the foot. At that time the ankle and foot were practically rigid and sensation was impaired but not absent, Heel cord lengthening was done in April, 1954. The patient was last examined on June 8, 1954, when he still had diminution of sensation below the level of the circumferential lesion on the calf. There was almost normal sensation posteriorly as far as the heel, and the dorsalis pedis artery was palpable.

Case 4.—A boy who first came to us when he was 7½ years old had fractured his left femur in March, 1952, at 5 years of age. Because of pain in the right leg, bleb formation below the knee, and swelling of the foot, the Bryant's traction had been discontinued on the third day and a hip spica applied. It was reported that, at the time of the patient's discharge from the hospital, his right foot had had an equinovarus deformity and there had been only a little motion in his toes. When the patient was observed in February, 1953, there was marked wasting of the right lower leg. An adherent scar 2 to 3 in. (5 to 7.6 cm.) in breadth extended almost completely around the lower calf. The ankle had but 15 degree motion, and the foot was in equinovarus position. Open lengthening of the heel cord with posterior capsulotomy was performed. When the patient was last seen, on Jan. 22, 1954, the right tibia was ⅛ in. (0.3 cm.) short, the right thigh was ½ in. (1.3 cm.) smaller than the left, and the right calf was 1¾ in. (4.5 cm.) smaller than the left. The right foot was ½ in. short (1.3 cm.). There was an equinus deformity of 10 degrees; the adduction of the forefoot was 15 degrees, and the varus of the heel was 10 degrees. There was no ankle or subtalar motion. In the lower leg, there was only a trace of power in the extensors of the toes, the short toe flexors, and the gastrocnemius muscle. There was no disturbance in sensation.

Case 5.—A boy aged 3 years and 11 months had fallen on July 10, 1951, and at that time sustained a spiral fracture of the mid shaft of the left femur. He was admitted to a hospital on the same day and placed in Bryant's traction. It was reported that two days later he was crying and screaming and moving around in the bed; this continued until five days after admission, when he pulled the right leg out of traction. By July 18, 1951, eight days after admission, the right foot was cold and swollen and anesthetic; there was a vesicular area on the leg, and the temperature was elevated to 101 F. On Aug. 2, 1951, approximately three weeks after admission, large areas of skin slough were noted on the right leg; one area extended into the muscle. These areas were débrided several times. On Aug. 6, 1951, about a month after admission, a hip spica was applied; this was removed a month later. Five months after injury, a split thickness graft was applied to the right leg. When we first examined this patient, in January, 1953, the lower leg was practically without musculature. The skin was atrophic and scarred down to the tibia. Musculature was fibrotic from below the knee to the ankle. The right ankle was in the equinus position; adduction of the forefoot was 25 degrees, and the foot was edematous and almost completely rigid. The toes were in fixed flexion. There was drainage from osteomyelitis of the distal phalanx of the first toe. Review of the roentgenograms revealed multiple osteochondromas at the ends of the long bones of the lower extremities. On Jan. 24, 1953, the distal phalanx of the first toe was removed. Subsequently, the equinovarus deformity of the foot was corrected. At the last observation, on May 25, 1954, the right leg was ¼ in. (0.6 cm.) short. The foot was rigid and in the equinus position; adduction of the forefoot was 5 degrees. There was spotty sensory impairment about the scarred area of the leg.

Case 6.—A 4½-year-old girl who had sustained a fracture of the right femur on Nov. 17, 1952, had been treated with Bryant's traction. Circulatory difficulty with the left foot had necessitated lumbar sympathectomy three weeks after the accident. The patient was observed on Jan. 13, 1953, when she was

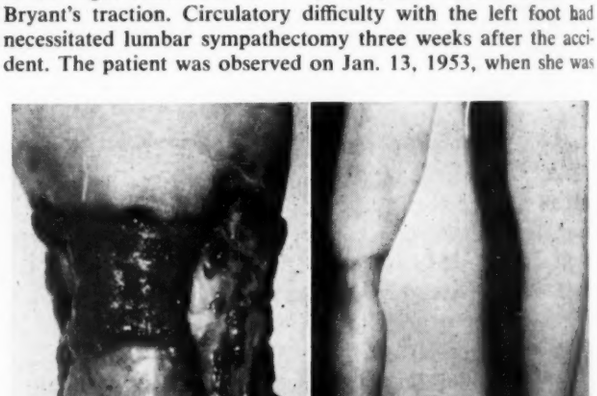

Fig. 2.—Second degree of involvement. *A*, the left leg of a 6-year-old boy 11 weeks after fracture of the right femur; the band of circumferential necrosis below the knee is characteristic. *B*, the same leg four months after skin grafting. The scar is constricted; the lower leg is edematous; the foot is held in equinovarus position.

transferred to another hospital. The right foot had good arterial pulsation, but there was a large ulcer in the pretibial area. The left leg was gangrenous below the ankle, with large areas of ulceration and necrosis involving muscles of the lower leg. A guillotine amputation was done 1½ in. (3.8 cm.) proximal to the malleoli, and skin grafts were applied (fig. 3). A stump revision was done five weeks later. The patient was last seen July 19, 1953; there was no anesthesia of the leg.

FACTORS THAT IMPEDE CIRCULATION

Several factors have been observed to have an adverse influence on circulation of a leg placed in Bryant's traction. Reduction in hydrostatic pressure of the vertical leg has been suggested by Dr. Hugh Montgomery [6] as a factor that, combined with secondary factors, causes circulatory impairment. Figure 4 shows the pressure required to raise a column of water to a height equal to the height of the toes above the heart when the leg is

Fig. 3.—Third degree of involvement. A 4½-year-old girl two months after fracture of the right femur. A band of necrosis is evident below the left knee; the left foot was amputated for gangrene.

suspended in a vertical position such as is attained with Bryant's traction. The heights are average measurements for the ages shown. For example, in the average 6-year-old patient the mean blood pressure must be at least 45 mm. Hg to maintain circulation in the foot of a vertical leg. In groups of children from 2 to 6 years old, the drop in blood pressure was measured by the average differences in the oscillometric readings at the ankle with the leg horizontal and with the leg vertical. The theoretical loss in hydrostatic pressure was obtained by measuring the average height of the ankle above the heart in the vertical leg of the same children. Drop in blood pressure and height of the ankle above the heart were found to correspond, particularly in children more than 2 years of age. This was considered to substantiate the fact that the reduction in blood pressure at the ankle is in almost direct proportion to the hydrostatic pressure necessary to maintain a column of water at a height corresponding to the height of the ankle above the heart. When the lower leg hangs dependent over the side of the bed, blood pressure at the ankle is raised; with the leg in the horizontal position, it returns to normal; and with the leg in the elevated, or Bryant's, position, it is lowered. The average variation in blood pressure, therefore, corresponds to the change in hydrostatic pressure as the ankle is held at various heights above or below the heart. This corresponds to the previously recorded variations in blood pressure in the posterior tibial artery at the ankle as determined in adults by Pearse and Morton.[7]

By making repeated oscillometric readings, over a period of 12 hours, on a leg in Bryant's traction, we have found that the lowered blood pressure at the ankle remains constant and does not compensate. This was further substantiated by readings obtained in two children under 2 years of age. Both were in Bryant's traction for femoral fracture; one was observed for two weeks, the other for four days. Of course, further indication that the reduction of hydrostatic pressure is a significant factor in initiating ischemia of the extremity is offered by the fact that, in arterial sclerosis, when there is the secondary added resistance to blood flow due to a narrowed arterial lumen, elevation of an extremity is a recognized cause of ischemia. While our subjects had no arterial sclerosis, other secondary factors were suggested as accounting for further reduction of blood flow.

Bandaging, Shock, and Traction.—When bandages were loosely applied, bandaging did not cause further lowering of the blood pressure reading; but when bandages were snugly applied, particularly in children more than 2 years old, the pressure could be reduced to zero. An attempt was made to determine the amount of circumferential pressure necessary to reduce the oscillometric reading to zero at the ankle. A blood pressure cuff was laid longitudinally on the thigh, and a circular bandage was applied to hold it against the leg. Care was taken not to reduce the blood pressure at the ankle by the bandaging. It was found that, even with the leg in the horizontal position, the oscillometric reading was zero if the pressure under the bandage was raised to 90 mm. Hg. With the leg vertical, less pressure under the bandage was required to stop oscillometric readings at the ankle, and this pressure corresponded to the anticipated drop due to the difference in hydrostatic pressure. When bandages were applied over moleskin or regular adhesive traction, readings were no different from readings obtained when bandages were applied over latex skin traction. Shock resulting in lowered blood pressure may be a secondary factor in producing ischemia in legs held by Bryant's traction, but it is doubtful if shock prevailed for sufficient time to reduce blood pressure in the cases cited. Traction on an extremity in which bone fragments have been permitted to override for a prolonged period has been described by Mustard and Simmons [8] as resulting in bilateral arterial spasm. Their interesting observations were made on dogs. The period of delay in application of traction on the children in whom circulatory complications developed with Bryant's traction was not recorded.

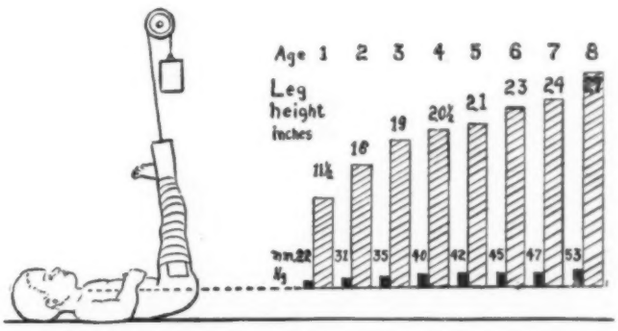

Fig. 4.—Shaded columns show average distances of feet above the hearts of children, 1 to 8 years of age, in Bryant's traction position. Black columns represent the hydrostatic pressure, in millimeters of mercury, required to support a column of water the height of the shaded columns.

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7. Pearse, H. E., and Morton, J. J.: Blood Pressure in Arteries of the Extremities in Normal Subjects and in Patients with Peripheral Vascular Disease, Am. J. M. Sc. **183**: 485-494 (April) 1932.

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Osteochondroma, Exercise, and Anomaly of Artery.—In case 5, an osteochondroma was apparent by roentgen examination posteriorly at the distal end of the femur and the upper end of the tibia of the leg in which circulatory complication developed; this may have been significant. In adults with organic peripheral vascular changes, exercise has been shown by Ejrup [9] to result in an inverse reaction, with a decrease in blood pressure in the lower extremities. It may not be mere speculation to think that the greater incidence of circulatory impairment of the well leg (it was the leg affected in five of the six cases observed) could have been due to the unrestricted activity of the foot. An aberrant anomaly of the popliteal artery has been described by Grant.[10] The popliteal artery may follow the course of a patent arterial branch from the internal iliac, which in embryonic life pushes down with

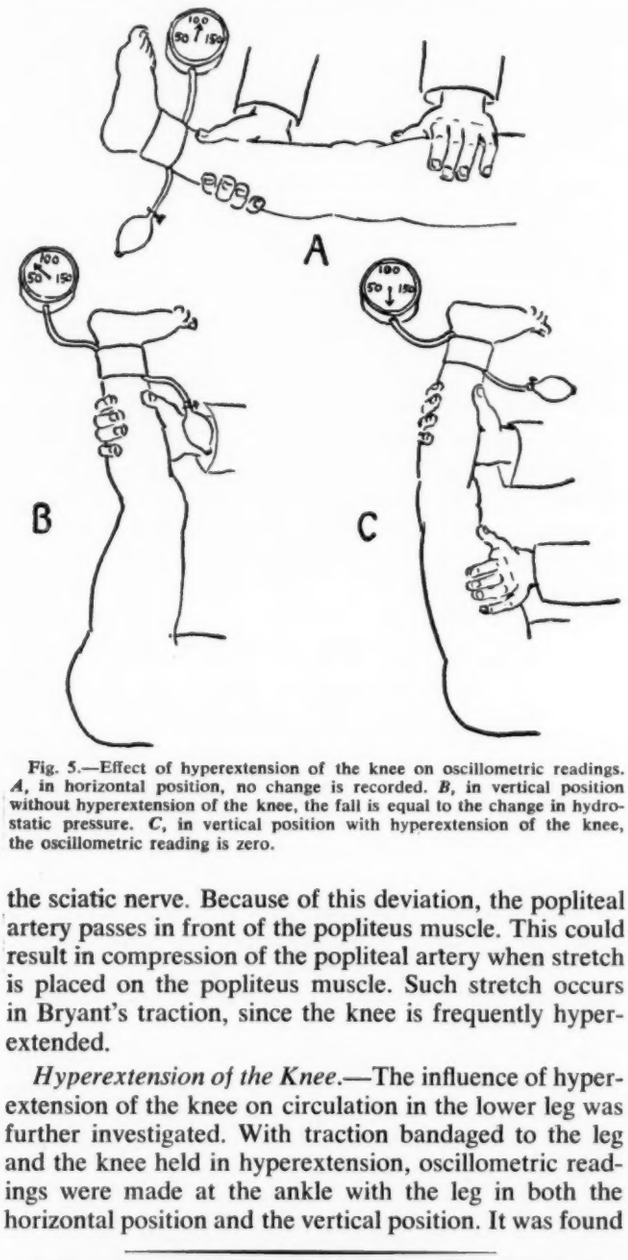

Fig. 5.—Effect of hyperextension of the knee on oscillometric readings. *A*, in horizontal position, no change is recorded. *B*, in vertical position without hyperextension of the knee, the fall is equal to the change in hydrostatic pressure. *C*, in vertical position with hyperextension of the knee, the oscillometric reading is zero.

the sciatic nerve. Because of this deviation, the popliteal artery passes in front of the popliteus muscle. This could result in compression of the popliteal artery when stretch is placed on the popliteus muscle. Such stretch occurs in Bryant's traction, since the knee is frequently hyperextended.

Hyperextension of the Knee.—The influence of hyperextension of the knee on circulation in the lower leg was further investigated. With traction bandaged to the leg and the knee held in hyperextension, oscillometric readings were made at the ankle with the leg in both the horizontal position and the vertical position. It was found that reasonable snugness of the bandage, the extent of the bandage from ankle to groin, and the site of a short circular bandage made no appreciable difference in patients less than 2 years of age. In patients more than 4 years old, the oscillometric reading at the ankle with the leg vertical was invariably zero; readings made without traction gave the same result. Then readings were recorded while the knee was hyperextended without a bandage, first with the leg horizontal, and then with the leg vertical (fig. 5). With the leg in the horizontal position, hyperextension of the knee did not influence the oscillometric reading. With the leg in the vertical position, the effect of hyperextension of the knee was fairly constant. In 15 children between 5 months and 7 years of age, arterial pulsation at the ankle was measured with the leg vertical and the knee hyperextended. In six patients less than 2 years old and in two of the four patients between 2 and 4 years old, oscillometric readings at the ankle could be obtained; in the other two patients between 2 and 4 years old and in all five patients from 4 to 7 years old, oscillometric readings at the ankle were zero. Angiograms were made on three fresh cadavers in an attempt to determine the site of the obstruction in the vertical leg with the hyperextended knee. The cadavers were children of 7, 8, and 12 years of age. The abdominal aorta was cannulated. The posterior and anterior arteries were opened at the ankles. The arteries were flushed with water and again with acetone. The legs were then placed in a vertical (Bryant's) position, and the knee of one leg was hyperextended. A solution of lead chromate in Vinylite was permitted to flow into the abdominal aorta at the systolic pressure recorded for the child at hospital admission. The solution was apparent at the open arteries of the ankle of the leg with knee in incomplete extension but not at the ankle of the leg with knee in hyperextension. The solution of lead chromate solidified in two minutes. After this time interval, during which the injection pressure was maintained, the legs were lowered and roentgenograms were taken. It was found that in the leg with hyperextended knee the injection substance failed to flow beyond the supracondylar end of the femur. Permission was not obtained to dissect the legs to determine the exact site of arterial obstruction.

SUMMARY AND CONCLUSIONS

Because of a change in hydrostatic pressure, the peripheral blood pressure is significantly reduced in children's legs placed in Bryant's traction. Secondary factors influencing circulation in the extremity may contribute to further reduction of blood pressure or impairment of blood flow, and ischemia may result. The one significant factor that interferes with circulation in the vertical leg, with or without the use of traction, is hyperextension of the knee. Its influence is apparent in patients more than 2 years old and is constant in patients more than 4 years old. In children between 2 and 4 years of age, Bryant's traction should be used with caution; in children more than 4 years old, Bryant's traction is dangerous. In children over 2 years old, elevation of the leg to a vertical position with the knee fully extended may result in disastrous circulatory impairment.

330 S. 9th Ave. (Dr. Nicholson).

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ARTERIAL GRAFTING IN MILITARY SURGERY

Capt. Robert B. Brown (MC), U.S.N.
and
Charles A. Hufnagel, M.D., Bethesda, Md.

In order to place the subject of arterial grafting, and our own particular interest in freeze-dried arterial homografts, in proper perspective in the wide scope of military surgery, it is fitting to open this presentation with a brief review. The incidence of injury to major vessels in casualties of modern warfare has been estimated as approximating 1%.[1] In the future, with body armor to protect against wounds of the abdomen and thorax, it is to be expected that the incidence of damage to the major vessels of the extremities will be increased and the treatment of these injuries will assume even greater importance in the over-all picture.

The results of treatment of vascular injuries, evaluated in terms of amputation rates, showed little, if any, improvement in World War II as compared to World War I. Although ligation of the artery involved was the usual method of treatment in both world wars, sporadic attempts were made to restore continuity of injured vessels, but these did not meet with notable success. In contrast, during the recent Korean conflict really significant advances were made in the treatment of blood vessel injuries. Many factors contributed. First, with the widespread interest and remarkable achievements in the field of cardiovascular surgery during the past few years, techniques have been refined and an increased number of surgeons skilled in these techniques have become available. Second, improved means for evacuation of casualties, notably the helicopter, have shortened the time interval between wounding and surgery. Third, better supportive therapy, particularly a more aggressive treatment of hemorrhagic shock, has contributed to survival in respect to both life and limb. In addition, an ever-increasing choice of antimicrobial agents has been available to control infections.

Relatively early in the Korean conflict concerted efforts were made to restore continuity to major vessels in the delayed treatment of vascular injuries, namely, that of false aneurysms and arteriovenous fistulas. It was not long before it had been conclusively demonstrated that this could be accomplished successfully by transverse repair, anastomosis, or grafting of the artery involved.[2] By such treatment the incidence of vascular insufficiency in the involved extremity was greatly reduced as compared to that following ligation. It still remained to be proved that in the treatment of vascular trauma in warfare it was feasible to attempt, routinely, to restore continuity to major vessels in forward surgical installations. In this regard one of us (R. B. B.) was skeptical of this possibility and expressed himself as follows[3]: "During the press of casualties of war or civilian disaster, it is obvious that in most instances neither the time, facilities, nor the specially trained personnel will be available for carrying out such procedures as emergencies routinely. In addition, it is questionable whether suturing or grafting can be expected to succeed in extensive gunshot wounds where there has been great destruction of tissues and which must be left open for treatment." The other (C. A. H.), however, expressed a much more optimistic view in conversations with the Office of the Surgeon-General early during the course of the Korean conflict and expressed willingness to undertake a trial of such measures in the field. The first objection raised was never really tested, because in its latter phases the Korean warfare became relatively stabilized as to movement, and casualties seldom overwhelmed established medical facilities. As to the second objection, several talented young surgeons, notably Jahnke, Howard, Hughes, and Spencer[4] soon demonstrated that it was untenable.

Through the efforts of these men a sufficient number of cases of major arterial injury were treated primarily by restoration of continuity of the vessels to establish some significant facts. 1. The amputation rate was markedly decreased by such treatment. 2. The sequela of vascular insufficiency in the involved limb was minimized by major vessel repair. 3. The incidence of complications including postoperative hemorrhage, thrombosis, spasm, and infection was low. 4. Resection and end-to-end anastomosis could be accomplished to restore continuity to the injured vessel in most instances. 5. After adequate débridement of injured vessel ends, there always was a sizable group of cases in which the resulting defect was great enough to require grafting.

TYPES OF GRAFTS

The types of grafts used to date in the treatment of these acute arterial injuries have been autogenous vein grafts and homologous artery grafts preserved in Tyrode's solution. Although the latter grafts had the advantage of saving time and could be used when autogenous vein grafts were not readily accessible, it was the opinion of

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Consultant in cardiovascular surgery, Surgical Service, U. S. Naval Hospital (Dr. Hufnagel).

Read before the Section on Military Medicine at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 23, 1954.

The opinions and conclusions expressed in this paper are those of the authors and are not to be construed as official or necessarily reflecting those of the medical department of the U. S. Navy or of the naval service at large.

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some [5] that the vein grafts were more satisfactory from the standpoint of end-results. So far as we can determine, no freeze-dried arterial homografts have been used in Korea, although they are available in limited supply to our Marines at the present time.[6]

It is our prediction that freeze-dried arterial homografts will be of great value in the field of military surgery. The method of processing these grafts has been described in previous reports.[7] Briefly, vessel segments obtained at sterile autopsies are frozen at –78 C, dried in a modified commercial freeze-drying machine, and stored at room temperature in vacuum bottles. At the time of implantation these vessels are reconstituted in isotonic sodium chloride solution containing penicillin and streptomycin. Although nonviable, they regain all the physical properties of a fresh artery. It has been demonstrated in the experimental animal that freeze-dried arterial grafts may be used with excellent results after storage for periods in excess of two years. The incidence of complicating thrombosis is lower, replacement of the freeze-dried graft with host tissue is more rapid, and there is less foreign tissue response than obtained with fresh arterial homografts.[7c]

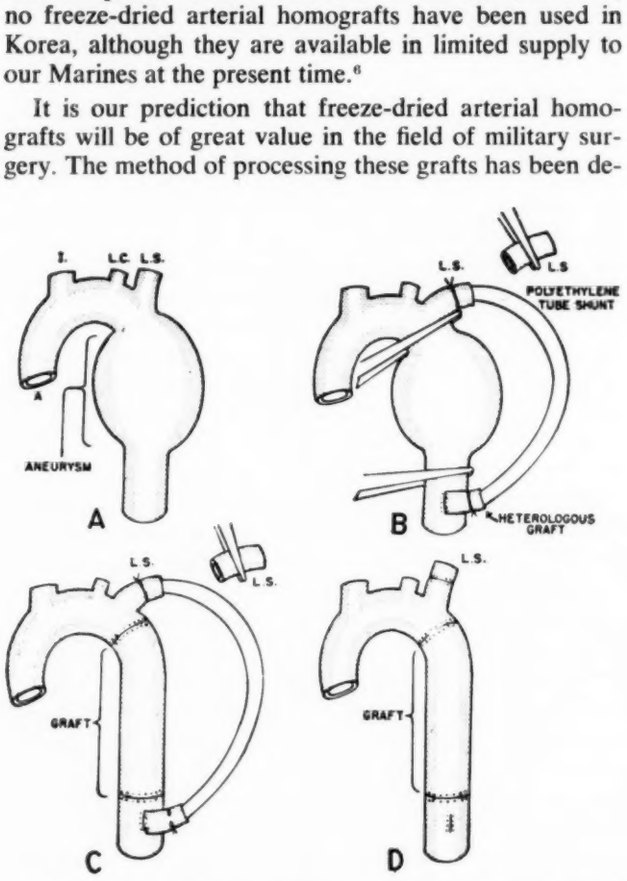

Fig. 1.—Steps in operative treatment of aneurysm of aortic arch in patient in case 1. A = ascending aorta, I = innominate artery, L.C. = left carotid artery, L.S. = left subclavian artery.

Although we have not used freeze-dried arterial homografts in cases of acute trauma, we have used them to bridge major arterial defects [8] after resection of segmental occlusive disease, long areas of coarctation, aneurysms, and in delayed surgery following vascular trauma. At the National Naval Medical Center 20 vessel segments have been implanted in 14 patients. These patients have been followed for periods varying up to 21 months. About 84 such grafts have been implanted at our civilian hospitals over periods up to three years. Although vessel replacement in some of the cases of occlusive vascular disease has not succeeded in restoring a completely adequate blood supply to the entire extremity, and in this sense leaves something to be desired, there have been but two proved instances of graft failure during the period of observation. The lack of complete success has been due to the presence of other serious arterial blocks primarily involving smaller vessels.

Three illustrative cases in which freeze-dried grafts have been used will be reported briefly as examples of the various sites in which such grafts can be used. For the first two of these cases, the grafts of the aortic arch and aortic bifurcation were taken at routine autopsy procedures and sterilized in ethylene oxide prior to processing by the Georgetown University Medical Center blood vessel bank. This method of sterilization of grafts, originated by one of us (C. A. H.) has proved most satisfactory in a large, diverse group of cases, and this has been corroborated in the animal laboratory at the Naval Research Institute.

REPORT OF CASES

Case 1.—A 26-year-old sailor was admitted to the hospital with an established diagnosis of aneurysm of the aortic arch, probably syphilitic in origin. At operation in another hospital, resection had been adjudged inadvisable and the aneurysm had been wrapped with cellophane. On Nov. 11, 1953, another operation was performed, the aneurysm was resected and the defect bridged with a freeze-dried arterial homograft. The steps in the operative procedure are indicated in figure 1. In *A* the aneurysm is fairly accurately portrayed as to position and size. In *B* the polyethylene tube shunt has been established between the proximal end of the divided left subclavian artery and an arterial graft from a calf, which has been sutured end-to-side to the thoracic aorta distal to the aneurysm. The purpose of the shunt is to provide blood flow in the aorta below the aneurysm sufficient to prevent ischemic spinal cord or renal complications that might develop during the period of aortic occlusion necessary for resection and anastomosis. In *C* the aneurysm has been

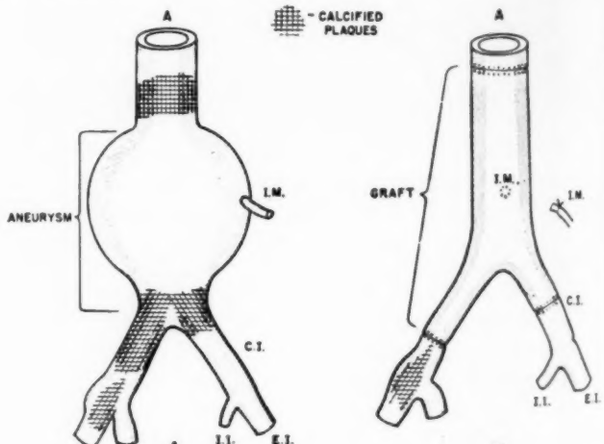

Fig. 2.—*A*, aneurysm and *B*, bifurcation graft in patient in case 2. A = abdominal aorta, I.M. = inferior mesenteric artery, C.I. = common iliac artery, I.I. = internal iliac artery, E.I. = external iliac artery.

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resected and the freeze-dried aortic homograft is in place. In *D* the shunt has been taken down, continuity of the subclavian artery has been restored by direct anastomosis of the divided ends, and the opening in the distal aorta has been closed. The patient had an entirely uneventful convalescence and returned to duty three months after operation. This is the first reported use of heterografts for side-arms for the easy establishment of shunts around areas of major vessels that are to be grafted. The use of such end-to-side anastomoses permits extreme ease in the establishment of such shunts and was devised by one of us (C. A. H.) to establish stable large shunts to permit resection of portions of the aorta and the aortic arch without the necessity for hypothermia or deviation through a mechanical heart-lung.

CASE 2.—A 75-year-old woman was admitted for evaluation of an asymptomatic abdominal aneurysm that had been discovered by a physical therapist. Three years previously a left lower pulmonary lobectomy had been performed for an alveolar cell carcinoma. Studies in the hospital revealed no recurrence of the carcinoma and no real contraindication to surgical treatment of the aneurysm. On Nov. 12, 1953, the aneurysm was

Fig. 3.—Aortic bifurcation graft in situ in patient in case 2.

resected and the resultant defect bridged with a freeze-dried aortic bifurcation. Depicted in figure 2*A* is the aneurysm of the lower abdominal aorta, with calcified plaques in the aorta and iliac below and in the aorta above the lesion. Because of this marked calcification, it was necessary to go nearly to the renal vessels above and well down into the common iliac below to obtain vessel segments suitable for anastomosis. The extent of the resection is indicated in *B*, which shows the graft in place. Figure 3 is the actual photograph of the graft. After operation convalescence was completely uneventful, and the patient was discharged from the hospital on her 12th postoperative day. At follow-up examination three months after surgery the patient was asymptomatic. Aortic and iliac pulsations were readily palpable through the abdominal wall. No aneurysm dilation of these vessels could be demonstrated. The peripheral pulses, pressures, and oscillometric readings in the lower extremities all were within normal limits.

CASE 3.—This final case is one of a combat vascular injury with residual circulatory insufficiency in the involved limb. The patient, a 25-year-old Marine, was admitted with a chief complaint of claudication in the left calf, which developed after walking about four city blocks. About nine months prior to admission he had been wounded in the left thigh by a mortar fragment. The injured left femoral artery had been repaired in a medical company hospital in Korea with a 5 cm. homologous arterial graft that had been preserved in nutrient medium. Apparently occlusion had developed in the graft or adjacent femoral artery, or both, as judged by the symptoms, very weak

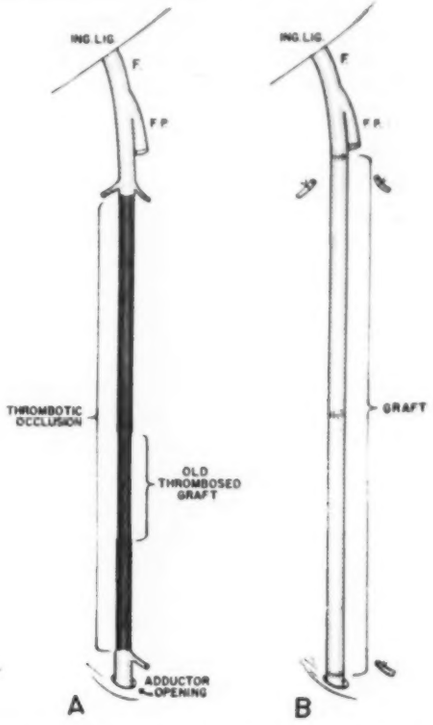

Fig. 4.—*A*, thrombotic occlusion and *B*, graft replacement in patient in case 3. Ing. Lig. = inguinal ligament, F = femoral artery, F.P. = deep femoral artery.

Fig. 5.—Composite femoral artery graft in place in patient in case 3.

to absent pedal pulses, and markedly diminished oscillometric readings in the left lower leg. On Nov. 19, 1953, the patient was subjected to operation and the left femoral artery was explored. The findings are shown in figure 4*A*. The previous arterial graft had contracted to a 3 cm. cord-like structure, identified by the suture line at either end. The femoral artery itself was throm-

bosed below the graft for a distance of about 8 cm. and above it for a distance of about 14 cm. A graft 25 cm. long was constructed by suturing together two shorter segments of freeze-dried femoral arteries. In *B* the graft is in place, extending from just below the deep femoral branch to the adductor hiatus. Fig. 5 is a reproduction of the graft in situ showing the three suture lines. This patient was released from active duty three months after operation. At this time peripheral pulses and oscillometric readings in the left leg were normal. Although rapid walking and running produced some cramping in the left calf, normal walking was unlimited by claudication.

Usage will determine whether freeze-dried arterial homografts are more satisfactory than fresh homografts or autogenous vein grafts in the treatment of acute vascular trauma. Certainly, the simplicity of storage, the long shelf life, the ease of transportation, and the excellent results obtained in the laboratory animal and human to date would recommend them highly. We do not wish to imply that in freeze-dried homografts we believe we have the answer to all problems. Processing of these grafts is not simple, and many variable factors are involved. These include rate and length of time, temperature, degree of vacuum, and extent of drying. There is a real need for establishing safe and optimum ranges for these variables, and studies directed toward this are in progress. In addition, source of supply is limited. The use of ethylene oxide to sterilize grafts obtained at routine autopsies has helped in this respect. The suitability of freeze-dried heterografts is being studies extensively in the animal laboratory at the Naval Medical Research Institute and at several other institutions. An experience with heterografts in humans is being accumulated [9] and, if satisfactory, promises to simplify further the problem of supply. Plastic cloths of various types, tailored to reproduce the vessel segment involved, are being used to bridge arterial defects by one of us (C. A. H.), Blakemore and Vorhees,[11] and others. If the results of their laboratory and clinical investigations are substantiated by further time and usage, most of the problem relating to procurement, processing, storage, and transportation of arterial grafts will be solved.

SUMMARY

The outstanding advances that were made in the treatment of acute vascular injuries during the Korean conflict demonstrate beyond doubt that, under the conditions of battle prevailing during the latter phases of this campaign, acute injuries to major vessels may be treated successfully by primary suture or grafting at forward medical installations. Current experimental and clinical studies on blood vessel replacement may be expected to improve still further the management of acute vascular trauma. On the basis of our personal experience with freeze-dried arterial homografts we believe they will be of great value in the field of military surgery.

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ACUTE CALCIUM DEPOSITS IN THE HAND

Robert E. Carroll, M.D., William Sinton, M.D.
and
Alexander Garcia, M.D., New York

The problem of acute and chronic deposits of calcium about the shoulder area is familiar to physicians and public alike. Much has been written concerning the cause and treatment of deposits in this area, but calcium deposits in other areas of the body are not so well known. The purpose of this paper is to focus attention on acute calcium deposits in the hand and to suggest a proper course of treatment for care. This condition has usually been overlooked; familiarity with the clinical picture should lead to more frequent recognition of the symptom pattern. The literature contains relatively few reports concerning calcium deposits in the hand. We feel that this reflects a lack of recognition by physicians of the clinical picture presented by calcium deposits with acute symptoms in this area. First mention of the problem was made by Cohen [1] in 1924. It was 10 years before another reference to this condition was made by Codman.[2] Only 16 reports were published during the ensuing 20 years.[3] Of special interest is the paper by Sandström [4]; reporting on 329 cases of calcium deposits, he listed 6 cases in digits and 2 cases in the wrist. Most published reports have presented an experience of only a few cases. Not all cases are fully described or located. With liberal interpretation for all references, we feel that the total experience from the published literature is 83 cases. The largest number of cases reported by any one author is 15.[5] As a basis for this study we have reviewed 100 consecutive cases of acute calcium deposits in the hand; our total experience now greatly exceeds this number. We feel that the ease with which we were able to collect a large number of cases is due to the fact that an awareness of this entity was created in the hospital where we work, and the attending and resident staffs alerted us to each

From the New York Orthopaedic Hospital, Columbia-Presbyterian Medical Center.

Read before the Section on Orthopedic Surgery at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 23, 1954.

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4. Sandström, C.: Peritendinitis Calcarea: Common Disease of Middle Life: Its Diagnosis, Pathology, and Treatment, Am. J. Roentgenol. **40**: 1-21 (July) 1938.

5. Seidenstein, H.: Acute Pain in Wrist and Hand Associated with Calcific Deposits: Report of 15 Cases, J. Bone & Joint Surg. **32-A**: 413-418 (April) 1950.

new case. All cases considered in this study are from the files of the Columbia-Presbyterian Medical Center, from our private practices, and from those of our staff associates.

CLINICAL MANIFESTATIONS AND DIFFERENTIAL DIAGNOSIS

Patients affected by this disability well remember the onset. There was sudden acute pain, which may have awakened the patient from a sound sleep. This type of acute development was present in all of our cases. The pain is intense; a statistical tribute to its severity is the fact that 26 patients reported to the hospital for emergency treatment within a few hours of the onset. Because the individual tolerance to pain differs, some patients waited several days before seeking help. The average time before the initial interview was three and a half days. Swelling of the area appeared rapidly in all but 15% of patients. The combination of acute pain and swelling caused loss in use of the hand. A history of prior strain or injury was specifically sought, but only one-third of the patients could remember some form of stress, such as wringing, that caused strain to the hand. In this group, injuries of a twisting or crushing nature were mentioned. The remaining two-thirds could not remember any unusual strain or injury to the hand. No vocational groups were dominant, except perhaps the housewife.

Usually the patient appeared carefully cradling his tender hand to protect it against any sudden, painful jolt. Gentleness aided in completing the examination, as any motion of the joints or tendons caused great pain. The swelling was readily apparent. The wrists or digits were flexed in an attempt at physiological rest. In four-fifths of the patients, the area showed redness. In some cases the redness appeared in streaks characteristic of lymphangitis; regional lymph nodes, however, were not enlarged or swollen in any case. Application of careful pressure in the swollen region usually defined one spot as the most painful and proved an excellent method for determining the location of the deposit of calcium and for selecting the roentgenographic projections and initiating treatment. Forty per cent of our patients were males and 60% were females. Of the 46 cases in which the dominant hand was recorded, the calcium deposit was in the dominant hand in 29 cases but not in 17. In 12 cases the sedimentation rate was obtained; in only 6 cases was it above 20 mm. in one hour (Westergren); the highest was 70 mm. The youngest patient was 13 years of age and the oldest 81; the average age was 45 years.

If the clinical picture of an acute calcium deposit in the hand is kept in mind, the diagnosis is easy; in fact, many cases will be correctly diagnosed that might otherwise have received an indeterminate diagnosis. We have reviewed and recorded the impression of the physician who initially examined each patient. The correct diagnosis was made in 46% of cases; we are sure that roentgenograms greatly aided in making the diagnosis. In 12% of cases, the physician had given no opinion. Of the remaining 42% of cases, the possibility of an infectious process was considered in 18%. The probability of trauma was indicated by 13% of physicians, 7% indicating possible fracture or dislocation and 6% indicating a severe sprain. Gout and acute arthritis were each considered by 4%. Two physicians thought that a foreign body caused the disability. One patient received vigorous treatment, with the diagnosis of acute gonococcic arthritis at the wrist.

ROENTGENOGRAPHIC EXAMINATION

The diagnosis of calcium deposit must be confirmed by roentgenographic examination. The deposit may be small and difficult to see. That is why the clinician must find the point of maximum tenderness and order roentgenograms in the proper projection to help the roentgenologist. A short note should indicate what is suspected. The importance of the proper plane is nicely demonstrated in the area of the carpal bones.[6] True anteroposterior and lateral projections frequently do not demonstrate the calcium deposit in the flexor carpi ulnaris or digital flexor. Deposits about the thumb metacarpal need several planes of projection for identification. The roentgenograms in 73 cases were correctly interpreted; in 20 cases, however, they were thought to reveal no abnormalities; 3 cases were diagnosed as chip fractures; the deposits were described as accessory ossicles in 2 cases; and in 2 cases interpretations described the abnormality without offering an impression.

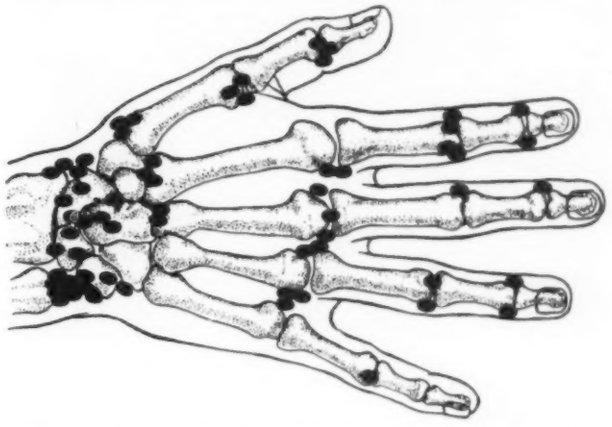

Fig. 1.—Diagram of the hand with black dots to represent a calcium location; these show the variety of locations for occurrence. Some dots represent several cases with the same position of calcium deposit.

PATHOGENESIS OF CALCIUM DEPOSITS

The pathogenesis of calcium deposition in and about the hand is obscure. We must accept the frequently stated theory of local stress necrosis. Most opinions include the early work of Moschcowitz in 1915.[7] Stress or strain may cause a slight tear in the fiber of a tendon or ligament. A resultant local necrosis of tissue causes the deposition of calcium phosphate and calcium oxalate in the area. These salts may be deposited directly, because of alkalinity of the necrotic tissue, or they may be deposited through the intermediary of a soap and fatty acid. In recent papers, Key [8] and Neff and Anderson [9] have am-

6. Gondos, B.: Calcification About the Wrist Associated with Acute Pain (Periarthritis Calcarea), Radiology **60**: 244-251 (Feb.) 1953.

7. Moschcowitz, E.: Histopathology of Calcification of Spinatus Tendons, as Associated with Subacromial Bursitis, Am. J. M. Sc. **150**: 115-126, 1915.

8. Key, J. A.: Calcium Deposits in Vicinity of Shoulder and of Other Joints, Ann. Surg. **129**: 737-755 (June) 1949.

9. Neff, F. E., and Anderson, C. M.: Use of Ultraviolet Blood Irradiation in Treatment of Bursitis and Tendinitis Calcarea, Am. J. Surg. **81**: 622-628 (June) 1951.

plified the theories of deposition. The calcium salt is radio-opaque; it is also extremely irritating to the tissues. Milgram [10] has taken material from an acute calcium deposit in a shoulder and injected it subcutaneously in the opposite arm; this caused a local cellulitis. As the deposit of calcium salt increases, pressure and pain develop, just as in a purulent abscess.

Fig. 2.—Acute onset of pain, swelling, and redness in the left hand brought 43-year-old patient to the hospital in eight hours. Roentgenogram (above) reveals a dumbbell-shaped deposit of calcium on the radial aspect of the fourth metacarpophalangeal joint, thought to be in the collateral ligament of the joint. A roentgenogram (below) made 11 days after onset reveals complete absence of calcium. No recurrence within two years has been found.

Only one-third of our patients specifically remembered preceding strain or trauma to the hand; this took place from two days to four weeks prior to the onset of pain. In 29 cases the deposit occurred in the dominant hand. Hands and wrists receive constant stress and strain during the constant use of daily activity. If trauma is to be considered a causative factor, it must be of a nature that is compatible with routine function, as no specific episode was remembered in two-thirds of the cases. Age must be considered as a factor. The stress and strain received by the hand is almost continuous. During the years from 30 to 60, however, an acute calcium deposit may be precipitated by relatively minor stress. The average age of our patients was 45 years; moreover, the largest group is found in the fourth, fifth, and sixth decades of life, from 30 to 60 years of age. Perhaps there is a metabolic factor that must be considered with trauma and age. This could account for the deposition of calcium salts in tendon or ligaments in other locations—such as the shoulder, hip, or elbow—in patients who have deposits in the hand. As far as we could tell, only six patients had calcium deposits in other foci at any time before or during the time that they had deposits in the hand.

Suggestions have been made to indicate that the acute episode is the activation of a preexisting deposit. This is not uncommon in the shoulder. Bosworth [11] has shown that 65.4% of calcium deposits in the shoulder were asymptomatic over a three year period. Concerning calcium deposits in the hand, preexistence does not seem to be a tenable thesis. We have roentgenograms of hands in varying periods prior to the acute episode that show no deposits. In viewing a large number of roentgenograms of hands daily on an active hand service and fracture service, we have not been able to find any evidence of asymptomatic calcium deposits in this area. We have had the opportunity to view these deposits at operation. In tendons, the deposit is beneath the peritenon, in the substance of the tendon; the soft calcium is under tension. Usually the surrounding tissues are edematous and inflamed. This is also true in ligamentous structures. The inflammatory response may disturb the normal anatomic position. When an opening is made in the deposit, it is found that the calcific material has the consistency of tooth paste.

LOCATION OF DEPOSITS

The calcium is located in the ligaments and tendons of the hand; this has been confirmed at operation. The most common site is the flexor carpi ulnaris tendon in the vicinity of the pisiform carpal bone [12]; in 37 cases the deposit was identified at this spot. Calcium deposits were also found in the long digital flexors and extensors in the region of the wrist. In the digits, deposits were found most commonly in the supporting ligaments; in the palm, however, the short intrinsic musculature was involved.[13] We had to draw on our knowledge derived from surgical experience, topical anatomy at examination, and roentgenograms in various planes to locate the deposits (fig.

Fig. 3.—Sudden onset of pain over the dorsum of the right wrist followed by swelling, redness, and loss of digital extension caused 48-year-old patient to seek aid after two days. Roentgenogram (left) reveals a calcium deposit in the common digital extensor tendon. A volar molded plaster splint, which could be removed for soaking the hand in warm water, was used. Pain subsided in eight days. A roentgenogram (right) made six weeks after onset revealed no signs of calcium.

10. Milgram, J. E.: Personal communication to the authors.

11. Bosworth, B. M.: Calcium Deposits in Shoulder and Subacromial Bursitis: Survey of 12,122 Shoulders, J. A. M. A. **116**: 2477-2482 (May 31) 1941.

12. Phalen, G. S.: Calcification Adjacent to Pisiform Bone, J. Bone & Joint Surg. **34-A**: 579-583 (July) 1952. Aitken, A. P., and Magill, H. K.: Calcareous Tendinitis of Flexor Carpi Ulnaris, New Eng. J. Med. **244**: 434-435 (March 22) 1951.

13. Cooper, W.: Calcareous Tendinitis in Metacarpophalangeal Region, J. Bone & Joint Surg. **24**: 114-122 (Jan.) 1942.

1). It would be impossible to locate each deposit accurately, beyond all doubt; however, the effective relief obtained by injection supports our anatomic location.

TREATMENT

Methods.—Reviewing the methods of treatment produced some interesting facts. There is no doubt that acute calcium deposit is a self-limited disability. In all of our

Fig. 4.—Acute deposits of calcium in collateral ligaments; both deposits disappeared. Left, deposit in collateral ligament of the distal interphalangeal joint in third digit of right hand of 47-year-old patient. Right, deposit in collateral ligament of the proximal interphalangeal joint in the right index finger of 65-year-old patient.

patients, freedom from pain terminated the disability; no patients had recurrent episodes. When no treatment whatever was given, an average of 20 days was required for pain to end. In patients who used only soaks in warm water, an average of 12 days was needed for relief. Relief in nine days, on the average, followed use of a splint only. In no case did we immobilize digits in plaster; we feel that this is contraindicated. Local injection with 1% procaine (Novocaine) hydrochloride gave freedom from acute pain within hours. Complete relief from all painful symptoms required an average of six days. Using hyaluronidase or hydrocortisone did not change this figure. When the calcium deposit was opened by operation, the pain subsided immediately or within 24 hours. The average time in all cases required for relief of pain was nine days. The various methods of treatment can be compared against this figure. It can readily be seen that the course is acute, severe, and brief. The indications for treatment by surgery are limited; the method we use for treatment is direct injection of 1% procaine into the deposit, with soaking of the hand in warm water. The cessation of pain is often dramatic. In subsiding disabilities, the warm water not only gives additional relief but maintains valuable motion in digital joints.

Results.—The results of treatment have been excellent. In all patients pain has subsided; moreover, it has never returned. Not one patient has had recurrence of the same disability in the hand. The calcium deposits were checked by repeated roentgenograms. This was quite difficult, as patients objected to roentgenographic examination once pain had subsided. When we could make repeated roentgenograms, it was impressive to see the calcium disappear. The average time required for disappearance was 14 days; in some cases specks were seen on roentgenograms made after three or four months; no deposit remained as long as six months. (In other words, all deposits disappeared from the roentgenogram and did not return.) The period of follow-up examination is necessarily short. If pain subsides in one week and the roentgenogram clears in two weeks, it seems of little value to extend the review to years. Many patients are currently under treatment for other conditions in our hospital. This presents an opportunity to observe them for many years in searching for recurrences. In cases in which all signs and symptoms of acute calcium deposit subsided promptly, we feel that an interval of three months was adequate for evaluating the treatment. In 84 cases we were able to observe progress well beyond three months.

COMMENT

Acute pain, swelling, and redness in the hand, with limitation of motion, should suggest to the physician the possibility of an acute calcium deposit. Calcium deposits in the hand are essentially of the same nature as calcium deposits in the shoulder, but, because of the superficial location of deposits in the hand, secondary inflammation is reflected more obviously in the skin and subcutaneous tissue. The ease with which we have assembled 100 cases would indicate that this entity is more common than is commonly suspected. There appears to be little indication for surgery; the use of procaine injection and warm

Fig. 5.—Left, a deposit, called an accessory bone by the roentgenologist, in the ligament of the radiocarpal joint of a 41-year-old patient. By the end of four weeks, no trace could be found. Right, a deposit, which later disappeared, located in the tendon of the extensor carpi ulnaris muscle of a 54-year-old patient.

soaks gives relief to this self-limited condition. Pain subsides shortly, and after several days or weeks the deposits cannot be demonstrated on roentgenograms. No evidence of recurrence in pain or calcium deposits has yet been found. In essence, the deposit is a chemical furuncle that is absorbed, ruptures spontaneously, or is lanced by the physician's needle.

SUMMARY

One hundred cases of acute calcium deposits in the hand present a uniform picture of acute pain, swelling, redness, and limitation of function. The condition is most common in patients between 30 and 60 years old. An activity requiring stress in the hand can precipitate this condition; the magnitude of the stress is not necessarily great but often approximates normal use. Calcium deposits form in areas where stress or strain has produced minute areas of necrosis; in several days they enlarge and set off an acute inflammatory response. With conservative treatment, the signs and symptoms will subside in less than three weeks.

180 Ft. Washington Ave. (32) (Dr. Carroll).

SEGMENTAL AORTO-ILIAC AND FEMORAL ARTERIAL OCCLUSION

TREATMENT BY RESECTION AND ARTERIAL GRAFT REPLACEMENT

D. Emerick Szilagyi, M.D.
and
Paul R. Overhulse, M.D., Detroit

In clinical practice during the past few years an increasingly larger number of cases of peripheral arterial deficiency has been recognized—very likely because of the more widespread use of angiographic methods—as representing, at least from the point of view of symtoms and, particularly, of prognosis and therapeutic approach, vascular lesions different from the conventional type of arteriosclerosis. The outstanding characteristic of these lesions is their more or less sharp limitation to relatively short segments of the large arteries supplying the lower limbs. Although their pathological distinction from ordinary arteriosclerosis is not clear, these variants of occlusive arterial disease deserve special attention by reason of their amenability to direct surgical methods of treatment. We wish to present a brief clinical characterization of this type of arterial disease on the basis of 27 cases recently observed and to discuss, in somewhat more detail, their treatment by resection and arterial homograft replacement, a method we have used in 21 instances (table 1).

PATHOGENESIS

The exact pathological identity of insidious segmental arterial occlusive disease is impossible to define not only because the pathological material studied in the past, in spite of the relatively long history of the disease, is not abundant but also because usually the lesion encountered at operation represents a very late phase of the abnormal processes concerned with its causation. The gross and microscopic pictures seen are, as a rule, the sum of nonspecific degenerative changes (atheromatous intimal proliferation, medial sclerosis, and periarterial fibrosis with various degrees of chronic inflammation) indistinguishable from those of ordinary atherosclerosis, the only important difference being the extent of involvement. Speculation suggests two possible assumptions regarding the pathogenesis of segmental arterial occlusion. First, one may regard the segmental occlusive lesion as a local, perhaps premature, accentuation of diffuse arteriosclerosis. However, the complete occlusion of a relatively short section of artery in the presence of minimal or no sclerotic changes in the arterial bed of the immediate vicinity is difficult to reconcile with the usual behavior of systemic arteriosclerosis. Moreover, segmental accentuation of diffuse atherosclerosis is often seen but is always associated with advanced changes in the neighboring arteries. Secondly, one may ascribe the causation of segmental arterial occlusion to the effects of essentially local factors. There is evidence, the details of which cannot be discussed here, that local inflammatory processes and mechanical stresses and strains may serve as starting points for the degenerative alterations whose end-result is the obliterative lesion.[1] In the development of segmental occlusion of the femoral artery, the lack of sizeable branches (from which the vasa vasorum originate) in its long course through the thigh may result in a poor intrinsic vasculature of this vessel that, in turn, may render it (as it may other long, branchless arterial trunks) vulnerable to degenerative changes initiated by other factors.

Only a much more extensive and precise correlation of the pathological and clinical findings than that now available, based on a much larger volume of operative material, will make it possible to determine whether these segmental lesions are a separate pathological entity or merely a variant of the conventional type of arteriosclerotic process. We believe, however, that on the grounds of its anatomic and clinical features one is warranted to speak of insidious segmental arterial occlusion, at least on the clinical plane, as a process distinct from arteriosclerosis as commonly understood. In this study we shall designate as "pure" segmental occlusion all insidious segmental arterial obliterations that were observed by arteriography and other clinical tests to be unassociated with any important degree of diffuse arteriosclerosis. Occlusive lesions of segmental type occurring in the presence of diffuse arteriosclerosis will be labeled "atherosclerotic segmental." This distinction, admittedly, must often be arbitrary and quantitative rather than qualitative.

CLINICAL CHARACTERISTICS

Frequency, Sex, Age, and Race Incidence.—Until the results of large angiographic surveys of patients with peripheral vascular deficiency are at hand, the true frequency

From the Department of Surgery, the Henry Ford Hospital.
Read before the Section on Surgery, General and Abdominal, at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 25, 1954.

1. Palma, E. C.: Arteriopatías estenosantes del miembro inferior: Síndrome del canal de Hunter y anillo del tercer adductor, Bol. y trab. Acad. argent. cir. 34: 771-787 (Nov. 7) 1950.

of segmental arterial occlusion will remain unknown. In the Henry Ford Hospital currently about 10 to 15% of the patients complaining of symptoms referable to deficient arterial circulation of the lower limbs are found to have segmental lesions, "pure" or "atherosclerotic," and about 60% of these are suitable for direct surgical treatment. As among patients with diffuse or systemic arteriosclerosis, the male sex is overwhelmingly predominant in the group. We have seen no Negro patient with this type of segmental occlusion. The mean and median age of the patients was 54 years, with a range of 45 to 61 years. The occurrence of this type of occlusive disease appears, therefore, to be about a decade earlier than that of the diffuse arteriosclerotic type.

TABLE 1.—*Summary of Clinical Material on Segmental Arterial Occlusion*

Treatment	No. of Patients	Total
"Pure" Segmental Occlusion	..	19
Resection and grafting	14 *	..
Endarteriectomy	2	..
Temporarily deferred	4	..
"Atherosclerotic" Segmental Occlusion	..	8
Resection and grafting	2	..
Emergency thromboendarteriectomy	3	..
Exploration, arteriectomy	1	..
Refused by patient	2	..
		27

* Nineteen operations performed.

Anatomic Distribution.—The consistency of the topographical localization of segmental arterial occlusion is striking (table 2; fig. 1). With one exception all lesions occurred in the aorto-iliac and superficial femoral segments. The exception was an occlusion of the external iliac artery near its origin. There is evidence to suggest that the aorto-iliac occlusion originates in the common iliac arteries and progressively involves the aortic bifurcation and terminal aorta.[2] The obliterative process in the superficial femoral artery is often first observed in the midthird of the artery, whence it appears to spread both caudad and cephalad, being always sharply demarcated above by the femoral bifurcation and below by one of the larger genicular branches, usually the superior ones. In the "pure" form of the lesion the neighboring arteries are normal for the age of the patient. This circumstance is especially noticeable in cases of superficial femoral occlusion, in which the angiographic appearance of the popliteal artery and its branches is indistinguishable from that of normal arteries (fig. 2*A* and *B*). In contrast, in the presence of diffuse arteriosclerosis a segmental localization of the occlusive process in the superficial femoral artery is always accompanied by extensive obliteration of the medium-sized and small arteries of the leg (fig. 2*C*).

TABLE 2.—*Anatomic Location of Lesions*

Vessel Occluded	No. of Lesions
"Pure" Segmental Occlusion	
Bifurcation of aorta	6
Common iliac artery	1
External iliac artery	1
Superficial femoral artery	11
Total	19
"Atherosclerotic" Segmental Occlusion	
Superficial femoral and popliteal arteries	2

Clinical Symptoms and Signs.—The outstanding clinical symptom of segmental occlusion is intermittent claudication or, more precisely, muscular pain brought on by exercise (table 3). Since the occlusion involves only a segment of a large arterial trunk, and since the smaller arteries are not seriously diseased, a good collateral circulation rapidly develops around the obstruction. There is a fairly adequate inflow of blood, which is sufficient to supply the demand for oxygen and nutrition during rest and moderate exercise. Blood flow through collateral branches, however, is never quite equal to normal flow, and thus excessive demand for oxygen will cause a relative circulatory deficiency and produce claudication. The type and severity of claudication will, of course, depend on the extent and level of obstruction. In aortic and iliac obstruction the pain will be gluteal or femoral, or both; in femoral obstruction, it will be femoral or sural. The pain is typically unilateral, not only because the lesion is often unilateral but also because in bilateral lesions one side is usually more severely involved and the pain on the more markedly affected side will force the patient to

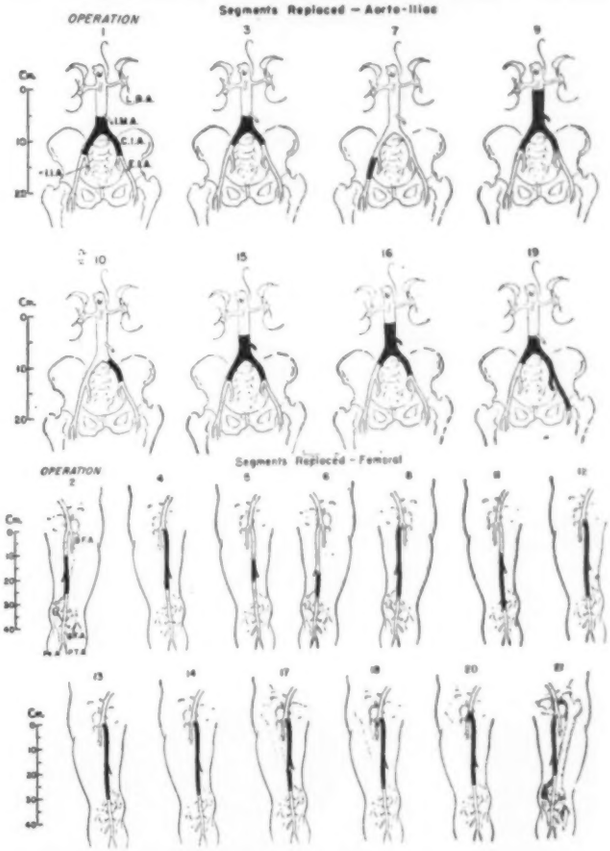

Fig. 1.—Locations of segmental arterial occlusions. Abbreviations used are as follows: D.F.A., deep femoral artery; A.T.A., anterior tibial artery; P.T.A., posterior tibial artery; Pe.A., peroneal artery; L.R.A., left renal artery; I.M.A., inferior mesenteric artery; C.I.A., common iliac artery; E.I.A., external iliac artery; I.I.A., internal iliac artery. The numbers refer to individual operations. In each of five patients there were two anatomically unrelated segmental lesions, each requiring a separate procedure.

2. Leriche, R.: Les oblitérations de la terminaison de l'aorte: Étude artériographique, Arch. klin. Chir. **270**: 85-86 (Nov.) 1951.

interrupt his exercise before it reaches the degree of activity that would elicit symptoms on the other side. In high (iliac and aorto-iliac) obstruction the unusual location of pain, if not carefully scrutinized, may lead to the clinical suspicion of a lesion of the nerves, bones, or joints.[3]

Subjective neural changes are absent in femoral and iliac obliteration but common in aorto-iliac obstruction. In the latter disease, because of ischemia of the sacral cord, the paresthesias may take bizarre forms: sacral formication, perineal pain, and plantar numbness. The complaint of loss of penile erection is not uncommon.

vation pallor, and soft tissue atrophy, so regularly seen in diffuse types of obliterative arterial disease, may or may not be present; when present, they are not marked. Gangrene is not seen as a complication of "pure" segmental obstruction of the femoral and iliac arteries and in aorto-iliac obliteration its appearance is late and its progress slow.

REPORT OF CASES

The following brief case summary illustrates the commonly seen features of "pure" segmental occlusion of the superficial femoral artery.

TABLE 3.—*Summary of Findings in Sixteen Patients with Insidious Segmental Arterial Occlusion Treated by Resection and Homograft*

Operation No.	Case No.	Age, Yr.	Claudication			Rest Pain	Peripheral Pulses *				Gangrene	Angiographic Site of Occlusion	Segment Resected, Cm.	Result		Length of Observation, Weeks	Postoperative Complications
			Hip	Thigh	Calf		F	P	PT	DP				Angiographic	Clinical		
"Pure" Segmental Occlusion																	
1	1	47	0	+	+	0	0	0	0	0	0	Aortic bifurcation	Aortic bifurcation	Patent	Good	47	.....
2	2	56	0	0	+	0	+	0	0	0	0	Left superficial femoral	15	Patent	Good	36	.....
3	3	58	+	+	+	0	0	0	0	0	0	Aortic bifurcation	Aortic bifurcation	Patent	Good	23	.....
4	4	52	+	+	+	+	0	0	0	0	0	Right superficial femoral	23	Patent	Good	23	.....
5	5	58	0	0	0	+	+	+	+	+	0	Right superficial femoral	7	Closed	Bad	23	.....
6	4	..	+	+	+	0	+	0	0	0	0	Left superficial femoral	11	Closed	Bad	21	.....
7	6	47	0	0	+	0	+	0	0	0	0	Right external iliac	6	Patent	Good	20	.....
8	7	54	0	0	+	0	+	0	0	0	0	Left superficial femoral	30	Patent	Good	18	.....
9	8	54	0	0	+	0	0	0	0	0	0	Aortic bifurcation	Aortic bifurcation	Patent	Good	18	.....
10	9	58	0	0	+	0	0	0	0	0	0	Left common iliac	7	Patent	Bad	14	Distal thrombosis
11	7	..	0	0	+	0	+	0	0	0	0	Right superficial femoral	24	Patent	Good	13	.....
12	8	..	0	0	+	0	+	0	0	0	0	Right superficial femoral	32	Patent	Good	12	.....
13	1	..	0	0	+	0	0	0	0	0	0	Right superficial femoral	29	Patent	Good	10	.....
14	6	..	0	+	+	0	+	0	0	0	0	Right superficial femoral	26	Patent	Good	10	.....
15	10	57	0	+	+	0	0	0	0	0	0	Aortic bifurcation	Aortic bifurcation	Patent	Good	6	.....
16	11	45	0	0	+	0	0	0	0	0	0	Aortic bifurcation	Aortic bifurcation	Patent	Bad	3	Distal thrombosis
17	12	48	0	0	+	0	+	0	0	0	0	Right superficial femoral	28	Patent	Good	3	.....
18	13	61	0	0	+	0	+	0	0	0	0	Right superficial femoral	28	.....	Good	3	.....
19	14	51	+	+	0	0	0	0	0	0	0	Left common iliac	Aortic bifurcation	Patent	Good	3	.....
"Atherosclerotic" Segmental Occlusion																	
20	15	65	0	0	+	+	+	0	0	0	+	Right superficial femoral	32	Closed	Bad	38	Postoperative hemorrhage
21	16	67	0	0	+	+	+	0	0	0	+	Left superficial femoral	27	Patent	Good	19	Popliteal thrombophlebitis

* Abbreviations: F = Femoral, P = Popliteal, PT = Posterior tibial, DP = Dorsalis pedis.

The most important physical changes in the involved extremities concern the arterial pulsations. A very simple and most reliable sign both in the detection and in the localization of the lesion is the absent pulse, femoral, popliteal, posterior tibial, or dorsalis pedis, at the appropriate level. The caution must be sounded that the palpation of the popliteal pulse requires great care and that the dorsalis pedis pulse may be normally absent. Ischemic changes such as lowered skin temperature, dependent rubor, ele-

3. Gilfillan, R. S.; Jones, O. W., Jr.; Roland, S. I., and Wylie, E. J.: Arterial Occlusions Simulating Neurological Disorders of the Lower Limb, J. A. M. A. **154**: 1149-1152 (April 3) 1954.

CASE 2.—A 50-year-old white man complained of a dull pain in the muscles of the left calf on walking. The pain had been present for four years and would appear after he had walked a distance of 200 to 300 yards (about 183 to 274 m.), forcing him to stop. Rest for a few minutes would always relieve the discomfort. Examination revealed slightly decreased temperature, some blanching on elevation, and mild reactive hyperemia of the left foot. The femoral pulses were equal and strong. The popliteal and pedal pulses were absent on the left side. The right lower limb was found to be normal in every way. A left femoral arteriogram showed occlusion of the superficial femoral artery in its upper two-thirds. The occluded segment was resected on Oct. 31, 1953, and replaced by an arterial homograft. Immediately after the operation the patient had good pulses in

the left foot; the claudication was completely relieved. On June 8, 1954 (eight months postoperatively), follow-up observation showed the patient to be free of symptoms; femoral arteriograms revealed the graft to be functioning well.

A typical instance of aorto-iliac obstruction, except for the rest pain, which was unusually marked, is presented in the following case.

Fig. 2.—*A*, preoperative, and *B*, postoperative typical angiographic findings in "pure" segmental occlusions of the left superficial femoral artery (case 1). All three major arteries of the leg fill well and appear like those in normal extremities at the same age. The collateral branches are ample and numerous. *C*, typical angiographic findings in "atherosclerotic" segmental femoral occlusion. The popliteal branches fill poorly or not at all, and the collateral vascular bed is meager.

CASE 3.—A 58-year-old white man gave the history of progressively severer intermittent claudication in both legs for the past six years. The difficulty had begun in the right leg and had soon become bilateral. He had become incapacitated for work and at the time of admission was unable to walk more than 100 ft. (about 30.5 m.) without stopping to rest. The pain was vise-like and was localized in the feet, calves, thighs, and hips; it was always relieved by rest. Recumbent position for some length of time caused severe ache in the soles of the feet, and the patient was forced to sleep sitting up with his legs in a dependent position. He had taken benzazoline (Priscoline) for three years, but without benefit. He denied any difficulty in maintaining erection. Examination revealed absence of all pulses in the lower extremities. There was some blanching of the feet on elevation, with reactive hyperemia of the lower extremities in the dependent position. An aortogram showed complete obstruction of the aortic bifurcation. On Jan. 14, 1954, the aortic bifurcation was resected and replaced with a homograft (fig. 3). On observation five months postoperatively, the patient was entirely free of claudication on walking as far as a mile. His feet were warm and the femoral pulses were strong, but no pedal pulses were palpable.

The following cases of aorto-iliac obstruction illuminate the diagnostic difficulties and the possible grave consequences of therapeutic delay and error.

CASE 8.—A 53-year-old white man had suffered from hypertension for many years (blood pressure was 190/120 mm. Hg) and had had, in another hospital, bilateral thoracolumbar sympathectomy without any appreciable improvement. About one year before admission the patient began having pain in both calves on exertion. Several months later severe rest pain in the left foot had appeared, and after conservative measures had failed to relieve the pain an above-knee amputation of the left leg had been done. The patient was first seen at our hospital in January, 1954, when no pulses were felt in the left lower limb and a weak femoral and no popliteal or pedal pulses on the right. An angiographic survey showed a complete occlusion of the left common iliac and right superficial femoral arteries and a partial occlusion of the right common iliac artery at its origin. Resection of the aortic bifurcation and replacement with a homograft was done on Feb. 23, 1954, and the occluded femoral segment was replaced with a homograft on April 7, 1954. Subsequent angiograms revealed both grafts to be open and functioning well. The patient had a mild cerebrovascular accident on the sixth day after the second operation, from which he recovered satisfactorily. He is now being instructed to wear a prosthesis.

CASE 10.—A 47-year-old white man was first seen at the Henry Ford Hospital on June 12, 1952, complaining of pain on exercise, in the calves and thighs of both legs, of 15 months' duration. His claudication had become progressively severer, so that he was unable to walk more than 300 yards without severe discomfort. He always obtained relief by resting. Examination on this admission revealed absence of all pulses in the lower limbs except the right pedal pulses, which one examiner believed to be present. Skin temperature studies with benzazoline showed a slow but normal response, and they were interpreted as indicating mostly vasospasm without serious organic occlusion. An aortogram done in another department showed obstruction at the aortic bifurcation, but this lesion was not clearly recognized. A bilateral lumbar sympathectomy was done on Aug. 18, 1952, but afforded no relief, and the patient was eventually obliged to give up his job as a factory worker. He was seen on the general surgery service several months later. A second aortogram verified the presence of a complete occlusion of the aortic bifurcation. Resection of the aortic bifurcation and replacement with a homograft were carried out on July 26, 1953, with complete relief of all symptoms in the left lower limb but only partial improvement of those in the right lower limb. A femoral

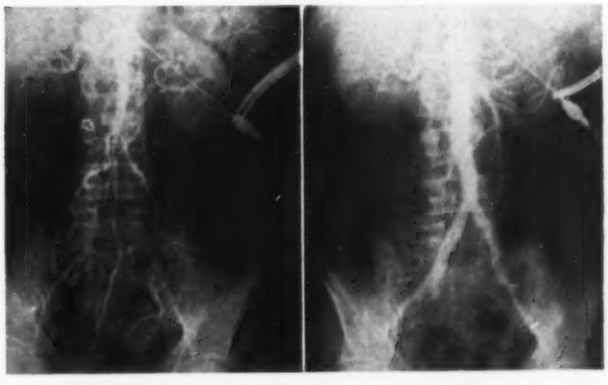

Fig. 3.—Preoperative and postoperative angiograms of "pure" segmental occlusion of the aortic bifurcation (Leriche's syndrome) (case 3).

arteriogram on April 17, 1954, revealed an occlusion of the midthird of the right superficial femoral artery. The occluded femoral segment was resected on April 20, 1954, and replaced with an arterial homograft. During the subsequent six weeks all of the residual symptoms disappeared. The patient resumed his former job. Aortograms and femoral arteriograms on May 6, 1954, disclosed well-functioning grafts.

COURSE

The course of segmental arterial obstruction is insidious. Although thrombosis undoubtedly often is the terminal phase of the process of obliteration, its appear-

ance does not manifest itself as a dramatic change in the clinical picture, since the abundant collateral circulation that, thanks to the relatively normal adjacent arterial bed, has gradually come into being *pari passu* with the process of occlusion precludes the development of acute ischemic changes. This is in striking contrast to the thrombosis that often completes the occlusive process in large arteries in diffuse arteriosclerosis; such a thrombosis, owing to the poor collateral circulation, produces a sudden reduction of blood flow, usually resulting in gangrene. In the cases of segmental occlusion here discussed we observed only one instance of sudden change to the worse in the clinical course (case 11), and this, too, was of minor proportions.

Fig. 4.—Preoperative and postoperative angiograms of "atherosclerotic" segmental occlusion of the left superficial femoral artery (case 16).

DIAGNOSIS

Differential Diagnosis.—The absence of rest pain, the presence of exertional calf pain, and the absence of popliteal and pedal arterial pulsation with a palpable femoral pulse in a limb showing minimal ischemic changes or none are, in the great majority of instances, sufficient to suggest strongly the clinical diagnosis of segmental femoral arterial occlusions. The unilateral absence of arterial pulsations from the femoral artery distally with gluteal or femoral claudication but no rest pain or marked ischemic changes will be reliable clinical evidence of the presence of an obliteration of the common iliac artery. Bilateral findings of similar description in association with neural changes in the sacral cord are a firm basis for the diagnosis of aorto-iliac occlusion. The absence of other organic manifestations of arteriosclerosis (coronary, cerebral, etc.) and of diabetes lends further support to the diagnosis. Difficulties will occasionally arise, however, in the clinical differentiation of segmental femoral occlusion from cases of early diffuse arteriosclerosis of the limbs and iliac and aorto-iliac obliteration from rare instances of obstructing vascular (aneurysm) or extravascular (neoplasm) lesions. These difficulties can be resolved only by angiographic studies.

Use of Angiography.—Not only from diagnostic necessity but also for the purpose of intelligent planning of the treatment, angiographic investigation is indispensable in every case of suspected segmental arterial occlusion. Indeed, we believe that an angiographic survey of the limbs is an essential part of the study of all cases of chronic peripheral arterial insufficiency without gangrene. In the experience here reported the patients were studied by means of translumbar aortography and percutaneous femoral arteriography. The arteries of the lower limb (from the level of the groin to the level of the ankle) were visualized with two-phase downgrade femoral arteriography. In some cases the iliac vessels were further investigated with retrograde arteriograms through the femoral artery. Occasionally open retrograde femoral arteriograms were also made. In all instances not only the occluded and the immediately adjacent arterial segments were studied but the entire infradiaphragmatic arterial bed. The studies were repeated at intervals postoperatively. The angiograms were obtained with the patient under general anesthesia by thiopental (Pentothal) sodium given intravenously. More recently epidural anesthesia with procaine has been found promising.

Other Objective Means of Study.—We are able to derive very little diagnostic or prognostic help from means of investigation other than angiography (skin temperature studies, plethysmography, etc.) in these cases and have largely discontinued them. Oscillometry is very helpful in the broad localization of the level of obstruction and in the early postoperative observation of the fate of the graft, before angiograms can be taken; we made regular use of it.

TREATMENT

From the first time chronic localized occlusion of the large arteries supplying the lower limb became known, the applicability of direct surgical attack in its treatment has been repeatedly stressed. It is not our present purpose to review the numerous technical procedures proposed in the past or to discuss their respective merits and imperfections. It may be stated briefly, however, that among these procedures disobstructive thromboendarteriectomy[4] and resection with autogenous vein-graft replacement[5]

4. dos Santos, J. C.: Sur la désobstruction des thromboses artérielles anciennes, Mém. Acad. chir. **73**: 409-411 (May 28) 1947. Reboul, H., and Laubry, P.: Endarteriectomy in Treatment of Chronic Endarteritis Obliterans of Limbs and Abdominal Aorta, Proc. Roy. Soc. Med. **43**: 547-552 (July) 1950. Freeman, N. E., and Gilfillan, R. S.: Regional Heparinization After Thromboendarterectomy in Treatment of Obliterative Arterial Disease: Preliminary Report Based on 12 Cases, Surgery **31**: 115-131 (Jan.) 1952. Barker, W. F., and Cannon, J. A.: An Evaluation of Endarterectomy, A. M. A. Arch. Surg. **66**: 488-495 (April) 1953. Wylie, E. J., and Gardner, R. E.: Peripheral Arteriosclerosis: Present Concepts of Management, California Med. **79**: 346-352 (Nov.) 1953.

5. Fontaine, R., and others: Sur le traitement des oblitérations artérielles: De la valeur respective des thrombectomies et thromboendartériectomies, des shunts artério-veineux et des greffes vasculaires (autogreffes veineuses fraîches), Lyon. chir. **46**: 73-94 (Jan.) 1951. Kautzky, R., and Schrader, E. A.: Die Wiederherstellung der arteriellen Gefassbahn als Therapie der Claudicatio intermittens, Deutsche med. Wchnschr. **78**: 464-466 (April 3) 1953. Julian, O. C.; Dye, W. S., Jr.; Grove, W. J., and Olwin, J. S.: Direct Surgery in Segmental Arteriosclerosis, J. Bone & Joint Surg. **35-A**: 905-916 (Oct.) 1953. Dye, W. S.; Olwin, J. H., and Julian, O. C.: Further Considerations on the Indications for and Limitations of Direct Surgery in Arteriosclerosis, Circulation **8**: 708-714 (Nov.) 1953.

have received the most extensive clinical trial and that, while handicapped by intrinsic shortcomings, both operations achieved commendable success in selected cases. The over-all cure rate with these procedures has ranged from 40 to 60%.

On physiological, anatomic, and general surgical grounds the most desirable form of treatment for segmental arterial disease would appear to be resection and replacement with a homologous arterial graft. In our last 16 cases, representing 21 operations, we elected to use this method exclusively (tables 1 and 3). The recorded experience with the use of arterial homografts in the treatment of aorto-iliac segmental occlusion, while very recent, is already considerable and is growing rapidly.[6] Only scattered instances of the application of this form of treatment to femoral segmental occlusion have, however, been reported.[7] The growth of the popularity of arterial grafting operations, particularly those involving the femoral artery, has undoubtedly been much retarded by the practical difficulties encountered in the procurement of human graft material. These difficulties have been greatly lightened, in our experience, by the introduction of a method of sterilization with the chemical compound β-propiolactone [8] that makes it possible to remove graft material at routine autopsies with complete disregard of aseptic precautions. All but two of the grafts used in the cases under discussion were procured in this manner and then sterilized. The grafts were stored in Hanks' solution until the time of use, which was always less than four weeks after procurement.

Surgical Technique.—A discussion of technical details is not within the scope of this article, but the brief statement of a few principles that have been found important will not be out of place. Since the success of the treatment by resection and graft replacement of segmental arterial occlusion depends on the removal of the entire nonfunctioning arterial segment without interfering with any of the collateral vessels that have developed about the obliteration, a good preoperative visualization by angiography of the entire arterial bed of the potential operative field and adjacent areas is essential.

There is much evidence to suggest that aorto-iliac occlusion has its start in one of the common iliac arteries. Examples of the disease are encountered in which the angiographically demonstrable occlusion involves only one common iliac artery but, on exploration, the terminal aorta and perhaps also the opposite common iliac artery, although patent, show changes of parietal thickening and periarterial fibrosis. On such occasions the resection of the entire aortic bifurcation, including all the diseased portion of the iliacs, is the logical procedure. The larger operation not only avoids the error of creating an unsatisfactory anastomotic line between a diseased aorta and the graft but prevents the progress of the disease that, if the concept of pathogenesis mentioned above is correct, would ensue in the terminal aorta and opposite common iliac were these left in place. A sharp differentiation must be made, however, between this situation and the iliac occlusion that may accompany or follow diffuse arteriosclerosis. In the latter, the terminal occlusion is a process of thrombosis, the proper treatment is thromboarteriectomy, and the prognosis is much less favorable. In fully developed aorto-iliac occlusion the distal limit of the disease process is not always sharply defined. The intimectomy of the iliac stumps that one at times has to perform preparatory to anastomosis must, therefore, be carried sufficiently caudad to reach a smooth and firm intimal layer. This may necessitate entering the thigh and continuing the intimal dissection as far as the femoral bifurcation (cases 10, 11, and 14). Frequently, resection and graft replacement of the external iliac artery in its entire length may be preferable to endarteriectomy (case 14). With this possibility in mind, we prepare and drape these patients in such a manner as to have sterile fields ready for the exploration of the upper thigh.

In the large majority of cases the resection and grafting of the occluded femoral artery is technically very simple. The obstructed segment usually involves the superficial femoral artery in its upper two-thirds or three-fourths, leaving the deep femoral artery patent. The main precaution one must observe is that the resection must include the entire segment of artery devoid of collateral vessels. This rule is particularly important as regards the upper limit of resection. Even though roentgenographically a portion of the superficial femoral artery may be seen to fill distal to the level of the deep femoral branch, if collateral branches have not developed at the level of the seemingly open segment the latter must needs be physiologically functionless and, therefore, a graft inserted at its distal limit will probably clot. We believe that our failures may have stemmed from lack of acquaintance with this "rule of the collaterals." In rare instances the segmental occlusion may involve the common femoral artery for a varying distance proximal to the profunda with the deep branch still patent. On such occasions it is usually possible to place the level of resection at a point 2 cm. distal to the profunda and to deal with the obliterated segment proximal to this point by means of endarteriectomy.

Systemic administration of heparin was not done in these cases. Heparin was given as a continuous drip (200 to 250 mg. of heparin in a 5% solution of glucose daily for seven days) through polyethylene catheters placed in the common iliac arteries in case 14; it is doubtful that much benefit was derived from the anticoagulant treatment.

RESULTS

The discussion of the operative results will be confined to observations made in cases treated with resection and grafting. It may be mentioned briefly, however, that our results with endarteriectomy in a small number of cases (table 1) were poor: one success and one failure in the

6. Mathivat, A.; Oudot, J., and Hatt, J. P.: Greffe artérielle de la fourche aortique: A propos de 3 observations de thrombose termino-aortique, Arch. mal. coeur **45**: 356-364 (April) 1952. Julian, O. C., and others: Direct Surgery of Arteriosclerosis: Resection of Abdominal Aorta by Homologous Aortic Graft Replacement, Ann. Surg. **138**: 387-403 (Sept.) 1953. DeBakey, M. E.; Creech, O.; Cooley, D. A., Jr., and Halpert, B.: Analysis of 20 Cases of Thrombo-Obliterative Disease of the Aorta Treated by Resection and Replacement with Homograft, read before the American Surgical Association, Cleveland, April 28-30, 1954.

7. Dubost, C.: Les greffes artérielles, J. Internat. chir. **13**: 304-312 (May-June) 1953. Eastcott, H. H.: Arterial Grafting for the Ischaemic Lower Limb: Hunterian Lecture, Ann. Roy. Coll. Surgeons England **13**: 177-198 (Aug.) 1953.

8. Szilagyi, D. E.; Overhulse, P. R., and LoGrippo, G. A.: Use of Chemically Sterilized Arterial Homografts: Experimental and Clinical Observations, read before the annual national meeting of the American Federation for Clinical Research, Atlantic City, N. J., May 2, 1954; abstracted in Clin. Res. Proc. **2**: 108 (April) 1954.

cases of nonatherosclerotic, "pure" segmental occlusion and three failures in three cases of "atherosclerotic" occlusion. It would be incorrect, however, to draw conclusions from these failures in regard to the general usefulness of endarteriectomy, since four of the five cases were poorly suited for the procedure; in the unsuccessful case of segmental occlusion a 25 cm. segment of the superficial femoral artery was involved; and all three patients with "atherosclerotic" obliteration had extensive diffuse arteriosclerosis with sudden ischemia supervening on an acute thrombosis in the common iliac artery (which in one instance extended to involve the aortic bifurcation).

The results of grafting operations such as are described here must be assessed by all three of the following standards: (1) patency of the graft as determined by arteriography, (2) restoration of the pulses absent before operation, and (3) symptomatic improvement. Subjective changes alone are an entirely unreliable criterion. In this study statements concerning clinical improvement imply not only symptomatic amelioration but also the reappearance of arterial pulsations.

TABLE 4.—*Summary of Results of Resection and Grafting*

Artery Occluded	Angiographic		Clinical	
	Open	Closed	Good	Bad *
"Pure" Segmental Occlusion				
Aorta	6	0	5	1 †
Common iliac	1	0	0	1 †
External iliac	1	0	1	0
Femoral	9	2	9	2
"Atherosclerotic" Segmental Occlusion				
Femoral and popliteal	1	1	1	1 ‡
Total	18	3	16	5

* In all the cases classified as showing bad results, the affected limb was neither improved nor made worse.
† Distal thrombosis.
‡ Because of the extensive involvement of the femoral bifurcation, the deep femoral artery had to be reimplanted into the graft.

Evaluation of the results of resection and graft replacement (table 4) must at this time be conditional, since the periods of follow-up observation extend only from three weeks to 11 months. Obviously, conclusions about the ultimate usefulness of this method of treatment must be conditioned by this fact. Certain important aspects of the results of these operations, however, can be assessed with a considerable degree of validity even as early as two to three weeks postoperatively. It has been our experience that if angiography shows the graft to be patent two weeks after operation it will remain so indefinitely or, more precisely, as long as our observations have so far extended (up to 11 months). As a rule clinical improvement closely parallels the success of grafting, and with an open graft the patient continues to improve until, at the time of complete healing four to six weeks postoperatively, the circulation is restored to what is normal for the limb. The correspondence between graft patency and clinical cure is not complete, however, owing to occasional thrombotic complications in the arterial bed distal to the graft. In two of our cases (operations 10 and 16, table 3) such complications prevented clinical improvement in spite of the presence of open grafts. It may be further noted that the results in successful cases are so uniform as to render grading of the results unnecessary.

Among the cases of "pure" segmental occlusion, in addition to the two thrombotic complications distal to the graft formerly mentioned, there were two failures due to thrombosis of the grafts proper (operations 5 and 6, tables 3 and 4). Both of these occurred following resection and grafting of superficial femoral arteries. The factors that may lead to failure in arterial grafting operations are, of course, numerous and often difficult to identify accurately, but in these two cases the lack of recognition of the appropriate level for resection (as mentioned above) was probably significant.

The possible future fate of these grafts is of great interest. It is generally agreed that arterial homografts are in time completely replaced by the ingrowth of host tissue. Will the newly built blood channel undergo degenerative changes (aneurysmal dilatation, calcification) after a time? Observations of short aortic graft segments extending over seven years have failed to reveal such changes. Only time will give the answer concerning the fate of grafts replacing aortic bifurcations and long segments of relatively narrow arteries such as the femoral. Likewise, long-term follow-up observations will be necessary to determine whether segmental occlusive lesions might not appear in other areas of the grafted artery or the occlusive process might not spread to other peripheral arteries outside the scope of surgical remedy, possibly vitiating an earlier good result.

A critical comparison of these results with those obtained by other methods is not now warranted for at least two reasons. First, the series here described is entirely too small. Secondly, the standards of selection of these cases appear to be much stricter than those of the more extensive reports dealing with surgical methods of other types, a fact that would operate in favor of a greater degree of success in the present series.

A special comment should be made on the two cases of diffuse arteriosclerosis listed in tables 3 and 4. Admittedly, the large majority of occlusive diseases of the lower limb due to diffuse arteriosclerosis are not amenable to direct surgical attack; in such cases the most severely involved arteries are the medium and small arteries of the leg, which are anatomically and physiologically unsuited for resection or other direct surgical treatment. We have however, come across cases of diffuse arteriosclerosis in which, in addition to the involvement of the arteries of the leg, there was a segmental occlusion of the superficial femoral artery in association with a patent popliteal artery well supplied with collaterals communicating with the deep femoral artery and some of the arteries of the leg. Such were the two cases in which the resection and replacement of the superficial femoral artery was undertaken on the assumption that the increased blood flow through the graft into the open popliteal artery might improve the blood supply of the leg. Both patients had early gangrene of the foot and faced amputation. In case 15 a satisfactory anastomosis at the popliteal level could not be established and a supracondylar amputation was finally performed. In case 16 (fig. 2*C* and 4) the graft remained open and the circulation of the limb was sufficiently improved to assure a regression of the impending gangrene and to allow almost normal ambulation. This approach to the treatment of selected cases of arterial disease due to diffuse arteriosclerosis would seem to deserve further cautious trial.

SUMMARY AND CONCLUSIONS

During the past two and one-half years, 27 cases of insidicus segmental arterial aorto-iliac and femoral occlusion were observed. Segmental arterial occlusion unassociated with diffuse arteriosclerosis has distinguishing clinical features that often make possible its differential diagnosis on clinical grounds alone. Angiography is important in the clinical study and especially in the preoperative investigation of segmental arterial occlusion. During a follow-up observation of from three weeks to 11 months in 14 cases of segmental arterial occlusion involving 19 operative procedures, resection and homograft replacement yielded good results (functionally patent grafts and relief of symptoms) in 76% of the instances. Even when this form of treatment was not successful the condition of the affected limb was not made worse by the operation. Resection with arterial homograft replacement thus appears to be a promising method of treatment of segmental arterial occlusion. Although of two such operations in cases of diffuse arteriosclerosis with incidental segmental occlusion of the femoral artery and with impending gangrene, one ended in failure, theoretical considerations suggest that, in selected cases of peripheral arterial disease due to diffuse arteriosclerosis, resection and arterial grafting may offer some help.

2799 W. Grand Blvd. (2) (Dr. Szilagyi).

THE MAN BEHIND THE M.D. DEGREE

Julian P. Price, M.D., Florence, S. C.

When you and I were awarded the degree of doctor of medicine—some 10, 20, or 30 years ago—we entered a new world. People began to address us as "doctor," and somehow this seemed to make us a bit different from others. As we became established in our work, patients came to us for advice and help. Frequently these patients knew nothing about us except that we were doctors, yet that single fact made them trust us and follow our suggestions. As time went on we were afforded certain privileges, tangible and intangible, that were not given to the man in the street, and we began to think that our degree in medicine entitled us to a special position of prestige in our community. The "M.D." became such a part of us that at times we were prone to think of ourselves as doctors of medicine and nothing more. We were even tempted to withdraw into a small egocentric kingdom of our own, inhabited by our medical colleagues and concerned with our medical problems, and to let the rest of the world go on its way. How foolish and illogical we physicians can be at times! How we need to be awakened from the lethargy of complacency and self-sufficiency!

The physician is a man with an M.D. degree. He is also a man behind the M.D. degree. Before he became a doctor of medicine he was a man, and a man he will remain until he dies. This simple and fundamental truth is one that we can ill afford to forget. It is of the man behind the M.D. degree that I would speak today, and I have selected four particular phases of his life for discussion.

AS CITIZEN

In the first place, the man behind the M.D. degree is a citizen. Being a citizen, he has certain rights and privileges but also certain responsibilities and obligations. As a citizen, the doctor of medicine is in a particularly advantageous position. His years of training in logical thinking, his daily contact with people and with their varied problems, his general knowledge, his position in his community—all fit him for the role of adviser and leader. Yet all too frequently this man behind the M.D. degree is content to bury himself in his personal affairs and disregard completely what is taking place around him. There is much that the physician should do as a citizen. He should vote (and many doctors fail to avail themselves of this fundamental right); he should participate in the work of organizations that are striving for better government; he should support programs that are fighting crime and corruption; he should take an active part in local, state, and national politics; he might even become a candidate for public office, as some of our colleagues have done, and participate directly in government.

AS MEMBER OF COMMUNITY

The man behind the M.D. degree is a member of a community. Our nation was founded on the idea of small communities; these offered the pioneer priviliges that he and his family could not enjoy when living alone: protection against an enemy, education for the children, social activities, church worship. In turn, these communities imposed a certain obligation on their members —a proportionate share in any joint effort, whether it was fighting, working, or paying the salary of the teacher or preacher—and only as the individual accepted this obligation was he recognized as a member of the group.

As time has passed, communities have increased in size, but the basic principles of community life still prevail; each member of the community, including the physician, must be willing to do his part. There are numerous fields of community life in which the physician can be active; three fields to which I think he should devote particular interest are public education, work with boys and girls, and charitable and philanthropic organizations.

Public Education.—The public schools wield a powerful influence in our country, second only to that of the home and church. If we are interested in our future we must be interested in our public schools. Yet how often do we find the physician—citizen, taxpayer, and father though he may be—content to let others run the schools as they will, to let his wife help the children with their homework, and to assume no responsibility himself.

There are certain questions that each physician might consider. Are the schools in my community doing a good job? Are the physical facilities adequate, with sufficient safeguards for the children's health? Are the teachers persons of good character, qualified to mold the thinking

of boys and girls? Are the athletic coaches intent solely on developing winning teams, or are they concerned with teaching good sportsmanship and character as well? Are the members of the school board men and women of vision and courage? Are the textbooks based on American principles and religious ideals, or are they tinted with the message of communism and atheism? Having found the answers to these questions, the man behind the M.D. degree has the privilege of helping to correct whatever deficiencies or inadequacies exist. If he thinks the task is too much for him, I would like to introduce him to some physicians I know—physicians who are members of school boards, who have served as presidents of P.T.A. groups, who have participated in community and state-wide surveys of the educational system, who have helped to make a study of textbook matter. These men are doing their duty as members of their community, but their number is still too few.

Work with Boys and Girls.—Another field of endeavor to which the physician might well contribute time and effort is work with boys and girls. Few members of the community are better qualified than the physician to stimulate, to promote, and to participate in work with boys and girls, and few will be respected and followed more quickly. The opportunities for such service are numerous; Boy Scouts, Girl Scouts, the Y.M.C.A., youth groups in churches, athletic leagues, and numerous other organizations are begging for the interest and support that physicians can give. Some doctors of medicine I know have responded to this challenge of youth. Recently I invited a younger colleague to dinner to meet a distinguished visitor in our community. "I would love to come," was his reply, "but our Cub Scout pack meets that evening and I can't let the boys down." Would that more physicians had this sense of responsibility to the boys in their communities!

Charitable and Philanthropic Organizations.—A third activity that needs the help physicians can give is the work of charitable and philanthropic agencies. Who knows the problems of the people of his community better than the practicing physician? Who is better qualified to sit on the planning boards of organizations that help the poor? Who is better able to give advice on the problems of the physically handicapped, to aid in the promotion of programs for physical, economic, and social rehabilitation? Who is in a better position to understand and deal with the growing problem of alcoholism?

Philanthropic organizations also need the financial support of doctors. The average physician is well able to give and to give generously, but all too often his is a token offering and not a heartwarming contribution. A friend of mine told me of an experience in soliciting money from two physicians. The doctors had offices in the same building; both were in the upper financial bracket. The cause was a worthy one. One doctor seemed to appreciate the privilege of giving and wrote a check for $100. The other, after much discussion and with much reluctance, gave a check for $10. It would seem that to the first physician the needs of his community were a responsibility and an opportunity for service; to the second they were a nuisance and a headache to be palliated with 10 grains of aspirin.

AS FAMILY MAN

In addition to being a citizen and a member of a community, the man behind the M.D. degree is also a member of a family. We are constantly hearing and reading of juvenile delinquency, the teen-age problem, and the young criminal. The situation in our country today is of vital concern to those who are interested in youth, particularly to those of us who have teen-age children or children approaching their teens. When I think of the difficulties that confront our young people, two pictures come to mind. The first is of the South Carolina Industrial School for Boys, which is located in my home town. To this institution problem and delinquent boys are sent from all over the state. Various reasons are given as to the cause for these boys' difficulties, but careful study will show that usually the trouble began when the parents failed to provide an adequate home. The second picture is of families I have observed over the years, families in which the boys and girls, living in the atmosphere of a wholesome and healthy home, have developed into men and women who are a credit to society.

The basic unit of a community is the family, and whether the community is strong or weak, energetic or lazy, moral or immoral will depend to a large extent on the type of home its families have built. Such being the case, we may well consider what factors enter into the makeup of a home that will encourage healthy development and an abundant life for a boy or girl. Sociologists, psychologists, educators, and religious leaders have all attempted to answer this question, so it should not be amiss for a practicing pediatrician to make suggestions culled from his personal observations.

A home should be the focal point of the life of the family, not a boarding house or hotel where members of the family meet occasionally. Each member of the family should feel that he is a distinct individual and at the same time an integral part of the group. Mutual play, joint activities, and family discussions should be an everyday experience. Parents must recognize their obligation to be with their children, to lead and direct them in their development; they cannot transfer this responsibility to a nursemaid, a school teacher, or a recreational director. Children need to be given the feeling of belonging, of being wanted and of being loved, but they should also be taught to recognize and respect parental authority. I decry undue severity in dealing with children, but I still believe that an occasional spanking applied to the right place at the right time by the right parent is a great help in molding character. Moral principles and spiritual values are learned best through observation—the child's observation of his parents' way of life.

Few persons outside of the ministry come into as close contact with family problems and have as much opportunity to influence family life as does the physician. The influence he can wield is great. How much more effective will be the counsel and advice the doctor gives if it is derived not only from his study and training but also from his personal experience in his own home! One of the greatest assets that any physician can possess is a healthy and happy home; it not only makes him a better doctor, but it gives him a sense of well-being and a source of strength that he sorely needs. A home of this type does

not come by chance; it grows slowly and gradually on the foundation stones of joint effort, mutual understanding, and love. Fortunate indeed is the doctor of medicine who has recognized his responsibilities to his own family and who has joined with his wife and children in creating a healthy and happy home.

AS INDIVIDUAL

Finally, the man behind the M.D. degree is an individual, a personality created in the image of God. The physical and mental health of our people is relatively good, but there is evidence of spiritual disease. The symptoms of this are not hard to find—the laxness of morals in our national government in recent years, the hold of organized vice on legislative and social life, dishonesty and corruption in various state and local governments, the increase in crime in our teen-age population, bribery and unethical conduct in amateur athletics, the prevalence of income tax evasion, the mad search for pleasure that causes people to spend four times as much for alcoholic beverages as they do for religious and welfare activities, the inroads being made by atheistic communism on the thinking of some citizens. And the doctors, judging from articles that are appearing in the press and from accusations being hurled in our direction, do not seem to have remained free from this malady. There are those among us who have put financial reward ahead of service, who depart from the Code of Medical Ethics when it conflicts with personal gain, and who are willing to cast aside medicine's tradition of devotion to duty.

Since the disease is spiritual, the treatment must also be spiritual. The enactment of more stringent laws may help to protect the healthy, but it will not cure the sick. Stricter codes of ethics may help to separate the upright from the guilty, but they will not eradicate the cause of guilt. Mediation committees may force the greedy physician to reduce his charges, but they will not remove the spirit of greed from his heart. The only remedy that is of any avail—and to this history bears testimony—is a change of heart. The greatest need of our country today, and of our profession, is spiritual rebirth, a return to God and to his eternal principles. And the rebirth must come in the heart of the average citizen, and of the average doctor of medicine.

Most physicians I have known are men of high principles. Many of them hold strong religious beliefs; yet for some reason they tend to shy away from expressing their convictions except in private conversation with intimate friends. As a result, they are regarded by the public, and by their colleagues, as men who have good moral character but are lukewarm toward religion itself. Our great need today is for every physician who is a member of a religious organization to reaffirm his vows and to let the public as well as his colleagues know, in clear and unmistakable language, the principles for which he stands and the beliefs that he holds. Only in this way may we hope to halt the progress of the spiritual disease that prevails in our profession and in our nation. Only in this way may we hope to set our feet on the road that leads to spiritual health.

There he stands, the man behind the M.D. degree—citizen, member of a community, family man, individual. Impossible, you say, for anyone to do and to be what I have suggested? Perhaps so; yet what physician worthy of the name will refuse to attempt the impossible when the occasion demands?

117 W. Cheves St.

CASE FINDINGS FROM ROUTINE CHEST ROENTGENOGRAMS

MASS SURVEYS OF COMMUNITIES VERSUS GENERAL HOSPITAL ADMISSIONS

William Siegal, M.D., Robert E. Plunkett, M.D.
and
Ben Z. Locke, M.S., Albany, N. Y.

Since 1947, the Division of Tuberculosis Control of the New York State Department of Health, through its Bureau of Case Finding, has been administering two tuberculosis case-finding services in upstate New York, that is, all of the state exclusive of New York City. These two services have a common purpose, namely, through the medium of chest roentgenographic examinations to screen out those persons who may have tuberculosis of the lungs. The general hospital program does this among patients admitted to general hospitals, and the mass survey program deals with apparently healthy persons. It should be emphasized that these two services do not supplant, but supplement, the long-established routine tuberculosis clinic services for the examination of contacts and patients with symptoms, which are provided by state and local tuberculosis hospitals and local health departments and which during 1952 examined 86,000 persons.

At the end of 1953, during approximately the first six and one-half years since these services have been functioning, more than one million persons, 15 years of age and over, have had roentgenographic examinations in each of these two programs: 1,076,506 in the general hospital program and 1,069,715 in mass surveys, for a total of 2,146,221. The number of general hospital patients of whom roentgenograms were made on admission represents over two-thirds of all persons aged 15 or over admitted to the participating hospitals. The comparison of the age-sex distribution of these two groups, the results of the initial roentgenographic examinations, and the results of follow-up examinations form the basis of

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this report, which also includes a short preliminary report of the yield of suspected intrathoracic tumors in the two groups.

CASE-FINDING SERVICES

General Hospital Program.—In upstate New York there are 170 nonprofit, private, or publicly supported general hospitals that admit more than 725,000 patients annually. The program, supported by public funds, was developed cooperatively by the state health department and the participating hospitals. The policies and procedures were set up in 1946. With only one or two minor changes, they are still in effect; briefly, they are as follows: Any nonprofit general hospital having an annual inpatient admission rate sufficiently large to take a minimum of 4,000 admission chest roentgenograms annually is eligible for assignment by the health department of complete photofluorographic equipment for taking 4 by 5 in. (10 by 13 cm.) or 70 mm. roentgenograms. Such a participating hospital receives 50 cents for the report of each admission roentgenogram submitted to the local health department. The department recommends that hospitals assigned equipment install it as near the admitting area as possible so that roentgenograms can be obtained of most patients as they are admitted, without their having to remove their clothes and before they are taken to their wards or rooms. Hospitals whose inpatient admission rate is insufficient to provide 4,000 adult admission chest roentgenograms annually may also participate in this program by using their own equipment. Such hospitals receive one dollar for each report on an admission roentgenogram.

Any interested eligible general hospital wishing to participate makes application to the state health department, through the local health officer, on a special agreement form in which it agrees to certain conditions, the most important of which are that it will: (1) make every effort to obtain a roentgenogram of the chest of every admitted patient 15 years of age or over, including private patients; (2) provide adequately for the interpretation of the roentgenogram as soon after admission as possible; (3) during the patient's stay in the hospital, make a sputum examination and any additional roentgenograms or other examinations that may be necessary to establish a diagnosis of tuberculosis for each patient whose initial roentgenogram shows definite or suspected tuberculosis; (4) make no charge to the patient for the initial roentgenographic examination and interpretation, for any additional roentgenographic examinations and interpretations, or for any other examinations necessary to establish an admission diagnosis of tuberculosis; (5) use the diagnostic nomenclature and classification recommended by the state department of health, based on the classification and definition of tuberculosis in the "Diagnostic Standards" published by the National Tuberculosis Association; (6) submit a report of the roentgenogram for each person examined under this program to the local health officer.

A word of explanation is in order. While the agreement specifically refers only to making roentgenograms of inpatients, actually hospitals in the program are encouraged to examine new outpatients also, for which they are reimbursed on the same basis as for inpatients. If the initial admission roentgenogram suggests the possible presence of pulmonary tuberculosis, additional examinations are made in the hospital for more accurate evaluation. The report of the hospital follow-up examination, not that of the initial chest roentgenogram, is sent to the local health department. Patients whose admission roentgenogram suggests the presence of nontuberculous intrathoracic disease are followed up in accordance with the established hospital routine. The program was formally inaugurated in the fall of 1947, with four hospitals participating for the remainder of that year. Since then additional hospitals have entered the program, so that by the end of 1953 there were 71 hospitals taking part. Of these 71 hospitals, 47 were using state-owned equipment and were being reimbursed at the rate of 50 cents for reports on admission chest roentgenograms, and the remaining 24 hospitals used their own equipment and received one dollar for each report.

Mass Survey Program.—The Division of Tuberculosis Control has seven photofluorographic machines for taking 70 mm. roentgenograms, five mounted on buses and two that are transported in panel-bodied trucks and can be set up indoors when necessary. Technicians to operate the machines and process the films, as well as film, chemicals, and special records, are provided by the division. With few exceptions roentgenograms are interpreted by the medical personnel of the division. All these services are provided to full-time county or city health departments and to state health districts on application by the county or city health officers or district state health officers, who have determined the need for chest roentgenographic surveys and have taken the necessary steps to enlist the assistance of other official and voluntary agencies to organize their communities for such surveys. Despite the rapid decline in the number of deaths from tuberculosis, the control of this disease still presents a great problem in overcrowded areas with substandard living conditions, where most new cases of tuberculosis occur. Also, the last quarter of a century has witnessed a shift from younger to older adults in the peaks of prevalence and mortality from tuberculosis. In the promotion of mass chest surveys, therefore, emphasis is placed on obtaining participation by cities, rather than rural areas, and in obtaining roentgenograms of the older segments of the population. In mass surveys the sexes were about equally divided; in the hospital program, two-thirds of the persons for whom roentgenograms were made were females and one-third were males. In mass surveys about 30% of both males and females were 45 years of age or older, whereas in the hospital program only 26% of females, but 52% of males, were 45 or over. The average age was 37 for females in both programs and 38 and 46, respectively, for males in the mass survey and hospital programs.

FINDINGS ON INITIAL CHEST ROENTGENOGRAMS

Miniature, 70 mm., survey roentgenograms may not equal in diagnostic quality standard 14 by 17 in. (35 by 43 cm.) roentgenograms; nevertheless, it is the policy of the Division of Tuberculosis Control to make tentative diagnoses of definite or suspected tuberculosis and an estimate of clinical activity on the basis of interpretation of these survey films. These tentative diagnoses serve

as working guides for the health officer as to how best to dispose his staff to provide necessary follow-up in obtaining more exact diagnostic and clinical evaluation,

TABLE 1.—*Probably Active Cases of Tuberculosis, Rate per 1,000 Persons for Whom Roentgenograms Were Made (Two Case-Finding Services, Upstate New York, 1948-1953)*

Year	Hospital Admissions	Mass Surveys
1948-1953	2.70	1.70
1948	6.32	2.80
1949	3.70	2.11
1950	2.61	1.72
1951	2.49	1.67
1952	1.98	1.03
1953	2.17	1.03

on which depend the required type and degree of supervision. In the hospital program, on the other hand, tentative diagnoses of definite and suspected tuberculosis and all ages yield a higher proportion of probably active tuberculosis in all stages of the disease throughout the entire period under discussion than do persons examined in mass roentgenographic surveys. Table 1 shows that this higher rate among hospital patients was maintained despite an annual drop in the rate of probably active cases in both programs. In fact, in 1952 and 1953 the rate for the hospital program was approximately twice that for mass surveys.

As shown in table 2 and on the graph, more tuberculosis was found with increased age for both sexes. With the exception of persons under 35 years of age in the mass survey program, where the rate is slightly higher for females, the rate is consistently higher for males in all age groups in both programs. The preponderance of males over females is greater in the hospital program than in mass surveys. This is especially true for probably active tuberculosis, for which in the hospital program the rate is

TABLE 2.—*Distribution by Diagnosis, Age, and Sex of Persons for Whom Chest Roentgenograms Were Made (Two Case-Finding Services, Upstate New York, 1947-1953)*

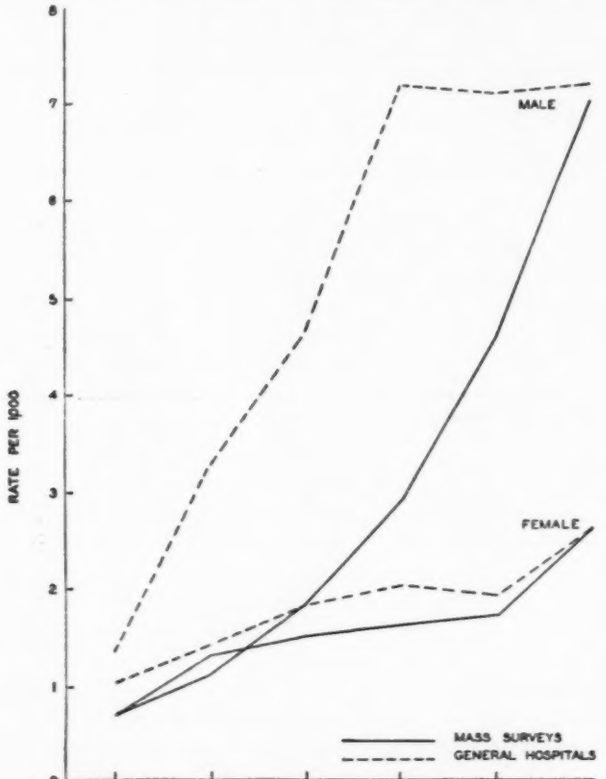
	Hospital Program						Mass Survey Program					
		No. per Thousand with Diagnosis of Tuberculosis						No. per Thousand with Diagnosis of Tuberculosis				
Age and Sex	No. of Persons for Whom Roentgenograms Were Made	Total	Probably Active	Probably Inactive	Suspected	Pleural Effusion	Age and Sex	No. of Persons for Whom Roentgenograms Were Made	Total	Probably Active	Probably Inactive	Suspected	Pleural Effusion
Total *	1,076,506	15.9	2.7	7.5	4.9	0.8	Total *	1,069,715	9.3	1.7	5.1	2.4	0.1
Male	352,067	25.5	5.2	11.3	7.6	1.4	Male	557,059	10.7	2.1	5.8	2.6	0.2
Female	724,439	11.3	1.5	5.6	3.6	0.6	Female	512,656	7.9	1.3	4.2	2.2	0.1
15-24	237,468	5.4	1.0	1.6	2.5	0.3	15-24	273,221	2.4	0.7	0.3	1.4	0.04
Male	50,248	7.0	1.3	1.8	3.3	0.7	Male	135,381	2.6	0.7	0.3	1.6	0.1
Female	187,220	5.0	1.0	1.6	2.3	0.1	Female	137,840	2.3	0.7	0.3	1.2	0.03
25-34	274,624	8.8	1.8	3.7	3.1	0.3	25-34	245,464	4.7	1.2	1.5	1.9	0.1
Male	57,941	11.6	3.2	4.0	3.7	0.7	Male	131,800	4.3	1.1	1.4	1.8	0.1
Female	216,683	8.1	1.4	3.6	3.0	0.2	Female	113,664	5.1	1.3	1.7	2.0	0.1
35-44	176,362	15.4	2.8	7.1	4.8	0.8	35-44	219,684	8.6	1.6	4.3	2.6	0.1
Male	58,655	20.2	4.6	8.1	6.3	1.1	Male	115,017	8.9	1.8	4.4	2.5	0.2
Female	117,707	13.1	1.8	6.6	4.1	0.6	Female	104,667	8.3	1.5	4.1	2.6	0.1
45-54	138,942	22.5	4.2	10.6	6.5	1.2	45-54	161,531	14.2	2.3	8.6	3.1	0.2
Male	60,510	30.6	7.2	13.2	8.9	1.4	Male	84,457	16.2	2.9	9.7	3.4	0.2
Female	78,432	16.2	2.0	8.6	4.6	1.1	Female	77,074	12.1	1.6	7.5	2.8	0.2
55-64	116,382	29.2	4.5	14.7	8.3	1.6	55-64	104,522	20.7	3.3	13.7	3.6	0.2
Male	59,023	38.0	7.1	18.0	11.2	1.8	Male	56,286	25.6	4.6	16.6	4.2	0.2
Female	57,359	20.1	1.9	11.4	5.4	1.4	Female	48,236	15.0	1.7	10.3	2.8	0.2
65 or over	111,490	35.4	5.0	18.3	9.7	2.4	65 or over	55,518	29.8	5.0	19.9	4.7	0.3
Male	58,423	43.3	7.2	21.4	12.1	2.6	Male	29,629	37.3	7.0	24.2	5.6	0.5
Female	53,067	26.7	2.6	14.8	7.1	2.2	Female	25,889	21.4	2.6	14.9	3.7	0.2

* Includes age not stated.

estimates of clinical activity are made, in most instances, as mentioned previously, after at least a second chest roentgenogram on standard-size film with the patient's upper clothing removed. On these bases, for both programs, 27,148 persons were considered to have definite or suspected tuberculosis, for a rate of 12.6 for every 1,000 persons examined. Of these, 4,779, or 2.2 for every 1,000 examined, were considered to have probably active disease.

In each category of definite or suspected tuberculosis, that is, probably active, probably inactive, and suspected tuberculosis, the rates are higher among hospital patients than among persons examined in mass roentgenographic surveys. Thus, in the hospital program the total rate for tuberculosis is 15.9 for every 1,000 examined and in mass surveys 9.3 for every 1,000, with corresponding rates for probably active tuberculosis of 2.7 for hospitals and 1.7 for mass surveys. Standardizing the rates by an age-sex adjustment affects only slightly the difference between the two programs. Hospital patients of both sexes and 5.2 per 1,000 for males and 1.5 per 1,000 for females, whereas in mass surveys the corresponding rates are 2.1 for males and 1.3 for females. In other words, the hospital program finds three and one-half times as many cases of probably active tuberculosis in males as in females, while in mass surveys this ratio is only 1.5:1. The ratios are altered only slightly by an adjustment of the rates for age differences. Less minimal disease is found in the hospital program than in mass surveys. Table 3 shows that in the hospital program 37% of cases diagnosed as probably active tuberculosis were classified as minimal, compared to 52% for mass surveys. On the other hand, the hospital program disclosed over twice as much far-advanced disease, 22%, as did the mass survey program, with only 10%. For both sexes in both programs, there was a decreasing percentage of minimal cases with increased age, and, here again, males had a proportionately higher percentage of far-advanced tuberculosis and a lower percentage of minimal disease than did females.

An attempt was made to determine whether there were significant differences in the yields of definite or suspected tuberculosis in urban and rural populations. Accordingly, an analysis was made of the results of mass surveys for 1952 and 1953 by arbitrarily dividing the different surveys into two groups: communities of 5,000 or more persons and those of less than 5,000. This is an arbitrary division, since few of the surveys were restricted solely to residents of the localities where the roentgenographic examinations were being made. In other words, there were no restrictions geographically or otherwise to differentiate the groups of persons examined. Table 4 shows that the yield of probably active tuberculosis was the same for both population groups in the mass surveys; the total tuberculosis rate, however, was



Cases of probably active tuberculosis per 1,000 persons for whom roentgenograms were made in two case-finding services in upstate New York, 1947-1953.

slightly higher for communities of more than 5,000 population. Although statistically significant ($P<0.01$), this increase was due to the preponderance of probably inactive tuberculosis. An analysis was also made of the results of interpretations of general hospital admission roentgenograms, according to the size of the communities in which the hospitals are located; it was assumed that, especially for the larger hospitals, most patients were drawn from the local communities where the hospitals are situated. The general hospitals participating in the program were divided into three groups, those in cities of 100,000 population or over, those in cities of 25,000 to 100,000, and those in communities of less than 25,000. Table 4 shows that hospitals located in cities of 25,000 to 100,000 population and hospitals in communities of less than 25,000 population have the same rates for probably active tuberculosis, 2.1 for each 1,000 persons for whom roentgenograms were made on admission. But for the other categories, that is, probably inactive tuberculosis, suspected cases, and cases of pleural effusion, the hospitals in the smaller communities gave higher rates, contrary to what might be expected. As for the hospitals in the large cities, those of 100,000 population or over, the yield of probably active tuberculosis was 75% higher

TABLE 3.—*Percentage Distribution of Initial Diagnoses of Probably Active Tuberculosis (Two Case-Finding Services, Upstate New York, 1947-1953)*

Type of Program	Total	Minimal	Moderately Advanced	Far Advanced
Both programs	4,778	42.6	40.0	17.4
Mass surveys	1,847	51.5	38.5	9.9
General hospitals	2,931	37.0	40.9	22.1

than in hospitals in smaller communities, 3.7 cases per 1,000 patients examined in the large city hospitals compared to 2.1 per 1,000 in the hospitals in smaller communities. This is significant ($P<0.01$). The big city hospitals also yielded higher rates in probably inactive and suspected tuberculosis. In considering the results of comparisons between the mass survey and general hospital programs, allowance must be made for variations in interpretations of general hospital admission chest roentgenograms by as many different radiologists as there are hospitals participating. There are no such wide variations in interpretations of mass survey roentgenograms, since almost all of these are interpreted by two or three members of the division staff.

RESULTS OF FOLLOW-UP

The responsibility for following up all persons whose initial survey or general hospital admission roentgenograms show the possible presence of tuberculosis is that of the health officers in whose area of jurisdiction these persons are residents. Reports of the results of such follow-up examinations are submitted by the health officers to the Division of Tuberculosis Control six months after they receive the initial results. The health officers need not submit follow-up reports for persons who were known to have tuberculosis before the survey or general hospital roentgenogram. The following information is included in a follow-up report submitted by a health officer: whether follow-up examinations were made, the

TABLE 4.—*Diagnoses of Probably Abnormal Chest Conditions, by Size of Community Surveyed (Two Case-Finding Services, Upstate New York, 1952-1953)*

Population Size of Community	No. of Persons for Whom Roentgenograms Were Made	Rate per 1,000 Persons				
		Diagnosis of Tuberculosis				Other Abnormal Chest Conditions *
		Total	Probably Active	Probably Inactive	Suspected	
Mass surveys						
Under 5,000	78,424	6.7	1.1	3.4	2.1	10.3
5,000 or over	190,636	7.7	1.1	4.6	2.0	10.7
General hospitals						
Under 25,000	67,910	16.5	2.1	8.3	4.8	1.3*
25,000-100,000	172,054	12.6	2.1	6.4	3.1	1.0*
100,000 or over	129,175	26.6	3.7	12.2	9.6	1.2*

* In the general hospital series, the only abnormal condition presented is pleural effusion; it is also included in the rate for total tuberculosis.

results of follow-up examinations, and the disposition of the active cases found as a result of follow-up examinations. In many instances the necessary follow-up examinations and, where indicated, the proper type of supervision were provided in considerably less than six months; however, a limit of six months was allowed for a more complete follow-up picture. It is realized that if more time were allowed additional information might become available, but, since it was thought that most significant results would be in by the end of six months, that was the limit set for all reports to be submitted to the division.

Data regarding the results of follow-up of definite or suspected tuberculosis are available for the five and one-half year period from January, 1948, through June, 1953, and relate to 13,986 patients found in the general hospital program and 9,178 persons in the mass survey program. Of all the cases initially diagnosed as definite or suspected tuberculosis in both programs, 83% of the hospital and 86% of the mass survey cases had never previously been reported to the state as cases of tuberculosis; 69% of the hospital cases and 71% of the survey cases were followed up clinically. The results of follow-up of these cases never previously reported form the basis of this part of the report. Of the 7,996 hospital cases initially diagnosed as definite or suspected tuberculosis and never previously reported, a diagnosis of tuberculosis was confirmed in 56%; of the 5,620 mass survey cases followed up, a diagnosis of tuberculosis was confirmed in 66%; with respect to the cases of tuberculosis initially considered to be probably active, reports of follow-up examinations showed that 81% of the hospital cases and 83% of the mass survey cases were classed as active or inactive tuberculosis.

Of particular interest are the results of follow-up of cases initially diagnosed as inactive or active tuberculosis, especially as these results relate to confirmation of a diagnosis of tuberculosis and determination of activity; these are shown in table 5. Among 3,776 hospital cases initially diagnosed as probably inactive tuberculosis, clinical follow-up showed 59% confirmation as inactive tuberculosis, 6% active tuberculosis, and 35% nontuberculous. In comparison, of 2,889 mass survey cases initially diagnosed as probably inactive, clinical follow-up showed 62% confirmation as inactive tuberculosis, 11% active tuberculosis, and 27% nontuberculous. In each program approximately three-fifths of the cases are confirmed as inactive, approximately one-third are found to be nontuberculous, and 6 to 11% are newly discovered cases of active tuberculosis. With reference to the cases initially diagnosed as probably active tuberculosis, there is a significant difference in the pattern of results of follow-up for each of the two programs. Thus, of 1,207 hospital cases initially diagnosed as probably active, 64% were confirmed as being active disease, 18% were inactive disease, and 19% were nontuberculous. In contrast, of the 989 mass survey cases initially diagnosed as probably active, only 55% were confirmed as active disease, 28% were inactive disease, and 17% were nontuberculous.

As stated previously, 69% of the unreported hospital cases initially diagnosed as definite or suspected tuberculosis were followed up. Of these, 1,568 were found to be active tuberculosis, a rate of 1.7 new cases for every 1,000 persons examined roentgenographically. The records indicate that there was no selection with regard to age or sex between persons followed up and those not followed up. On this basis and on the premise that the same proportion of active tuberculosis would have been found among those followed up and those not followed up, it is estimated that had it been possible to follow up all the 11,601 hospital cases initially diagnosed as definite or suspected tuberculosis and not previously reported, a total of 2,274 active cases would have been found, for a rate of 2.4 active cases for every 1,000 persons for whom roentgenograms were made.

Similarly, for the original mass survey cases, of the 71% followed up, 1,254 new cases of active tuberculosis were found, for a rate of 1.3 per 1,000 persons examined roentgenographically, and if all the 7,889 mass survey cases initially diagnosed as definite or suspected tuberculosis could have been followed up, 1,759 new active cases would have been found, for a rate of 1.8 per 1,000 persons examined in mass roentgenographic surveys. The disposition of cases of active tuberculosis after follow-up shows that 31% of the persons with active tuberculosis found through the hospital program were hospitalized,

TABLE 5.—*Results of Clinical Follow-Up of Survey Diagnoses of Previously Unreported Cases (Two Case-Finding Services, Upstate New York, 1948-1953)*

Survey Diagnosis	Total No.	Follow-Up Diagnoses, %		
		Active Tuberculosis	Inactive Tuberculosis	Not Tuberculosis
Hospital program				
Probably active tuberculosis.....	1,207	63.8	17.6	18.6
Probably inactive tuberculosis.....	3,776	6.2	58.5	35.3
Mass survey				
Probably active tuberculosis.....	989	55.1	27.7	17.2
Probably inactive tuberculosis.....	2,889	10.6	62.1	27.3

as compared to only 12% in the mass survey program. A greater percentage of cases, however, is found in the advanced stage of the disease in the hospital program than in the mass survey program.

SUSPECTED INTRATHORACIC TUMORS

In screening chest roentgenograms for tuberculosis, many other abnormal intrathoracic conditions are recognized; prior to 1952 these were included in a tabulation as "other conditions." In 1953, an analysis of this large group of other conditions was made for intrathoracic tumors, cardiovascular disease, and miscellaneous conditions, by age and sex for both programs. Table 6 shows some preliminary results of the initial findings regarding suspected intrathoracic tumors. During 1953, 254,549 patients, 15 years of age or over, had admission chest roentgenograms in the general hospital program, and 153,914 persons, 15 years of age or over, were examined in mass roentgenographic surveys, for a total of 408,463. Among these, suspected intrathoracic tumors were initially diagnosed in 1,501 persons, for a rate of 3.7 per 1,000 persons examined. Of the group with suspected tumors, 916 were males, a rate of 5.8 per 1,000, and 585 were females, a rate of 2.3 per 1,000; the rate was two and one-half times higher among males. Compared with initial diagnoses of probably active tuberculosis, the rate for intrathoracic tumors is 60% higher in the general hospital program and 50% higher in the mass survey pro-

gram. Or, speaking generally, three cases of suspected intrathoracic tumors were screened out for every two of probably active tuberculosis; overreading, however, is far more likely for pulmonary neoplasm than for pulmonary tuberculosis.

While the rate of suspected pulmonary tumor in males exceeds the rate in females in both programs, this is evident in every age group in the general hospital program,

TABLE 6.—*Number of Persons with Initial Diagnosis of Intrathoracic Tumor and Rate per 1,000 Persons for Whom Roentgenograms Were Made (Two Case-Finding Services, Upstate New York, 1953)*

Age and Sex	Hospitals		Mass Surveys	
	No.	Rate	No.	Rate
Total *	1,109	4.4	392	2.5
Male	673	8.2	243	3.2
Female	436	2.5	149	1.9
Under 45				
Male	95	2.5	63	1.3
Female	117	0.9	43	0.8
45 and over				
Male	564	13.6	180	7.1
Female	313	6.9	103	4.3

* Includes age not stated.

where the total rate in males is more than three times that in females, whereas in the survey program there is very little difference between the sexes up to age 35, and the total rate in males is only 66% higher than in females. In both programs the rate definitely increases with age for both sexes; the rates as a whole are two and one-half times higher in the hospital program. Plans have been formulated and procedures are in effect to obtain results of follow-up examinations and treatment or disposition of cases of possible pulmonary tumors. Sufficient data are not yet available for definitive evaluation. Several small spot-checks of results of follow-up in a few community surveys and in one large hospital seem to show that about 10% of persons whose initial roentgenograms showed suspected intrathoracic tumors are found to have bronchogenic carcinoma.

SUMMARY

During a period of about six and one-half years, 1,076,506 patients in 71 general hospitals had chest roentgenographic examinations on admission, and 1,069,715 persons were examined roentgenographically in special group and community surveys. In mass surveys the sexes were equally divided as to number examined; in the hospital program, the ratio of females to males was 2:1. On initial interpretation of the films, almost twice as much definite and suspected tuberculosis was found in the hospital program as in mass surveys. In both programs the rates for all categories of tuberculosis—probably active, probably inactive, and suspected—increase with age for both sexes, but the rates for males are almost always greater than for females. Eighty-three per cent of the initially diagnosed hospital cases and 86% of the mass survey cases had never previously been reported. About 31% of patients with active cases of tuberculosis from the hospital program, but only 12% from the mass survey program, had been hospitalized. On initial roentgenographic examination in each program, about one and one-half times as many possible intrathoracic tumors as cases of probably active tuberculosis are screened out. For both programs combined, possible tumors are diagnosed two and one-half times more frequently in males than in females.

PHILADELPHIA PULMONARY NEOPLASM RESEARCH PROJECT

PRELIMINARY REPORT

Katharine R. Boucot, M.D., William Carnahan, M.A., David A. Cooper, M.D.
Lieut. Thomas Nealon Jr., (M.C.), U.S.N.R., Donald J. Ottenberg, M.D.
and
Peter A. Theodos, M.D., Philadelphia

There is an impressive contrast in well-conducted surveys between the detection of curable tuberculosis and that of curable lung cancer. A significant amount of survey-found tuberculosis is minimal in extent and, therefore, amenable to present-day treatment, whereas, despite immediate emergency referral of persons whose photofluorograms were read "suspect neoplasm" at two official Philadelphia chest x-ray units, resection could be done in only 30% of a series of 100 consecutive cases. Of 52 persons in this group on whom a three year follow-up period has elapsed, only 5, or 9.6%, survived. Thus, the suitability of single photofluorograms for finding curable lung cancer must be questioned.

There are few available data on the prevalence of proved survey-detected lung cancer. Scamman,[1] reporting on 536,012 persons surveyed in Boston in 1949, includes metastatic as well as "presumptive" carcinoma in a rate of 14.2 per 100,000. Only 43 cases are stated to have been proved primary lung cancers, a yield of only 8 per 100,000. Guiss [2] reported 12 per 100,000 in the 1950 fast tempo Los Angeles survey. Both these figures are markedly lower than the rate of 37 per 100,000 [3] obtained at the two official Philadelphia units, where routine meticulous follow-up is emphasized. With few excep-

From Woman's Medical College of Pennsylvania, and Director of X-Ray Surveys, City of Philadelphia (Dr. Boucot); Statistical Research Department, Philadelphia Tuberculosis and Health Association (Mr. Carnahan); Graduate School of Medicine, University of Pennsylvania (Dr. Cooper); Temple University School of Medicine (Dr. Ottenberg); and Jefferson Medical College (Dr. Theodos).

1. Scamman, C. L.: Follow-Up Study of Lung-Cancer Suspects in Mass Chest X-Ray Survey, New England J. Med. 244: 541, 1951.

2. Guiss, L. W.: Dividends and Defects of the Mass Survey Method in Detecting Lung Cancer, read before the American Cancer Society, New York, Nov. 2-6, 1953.

3. Boucot, K. R., and Sokoloff, M. J.: Is Survey Cancer of the Lung Curable? read before the American College of Chest Physicians, 20th Annual Meeting, San Francisco, June 17-20, 1954.

tions the cancer cases were found among men over 45 years of age, in whom the rate was 284 per 100,000. Basic differences in the populations surveyed do not account for the increased prevalence in our group, since the Philadelphia group was somewhat younger and had fewer men over 45 years of age than the Boston or Los Angeles groups. Our figures are conservative, since they exclude those with clinical but not tissue diagnoses, those who could not be located, and those on whom no follow-up was attempted because their photofluorograms had been read as "negative."

Since, at present, surgery offers the only hope of survival to the patient with lung cancer, curability depends on resectability. Among the factors involved in resectability are the presence or absence of symptoms, the promptness with which persons seek medical advice in the presence of symptoms, the alertness of physicians in advising adequate studies, the frequency with which persons report for photofluorograms, their cooperation in obtaining study when there is evidence of roentgenographic abnormality, their ability to obtain hospital beds promptly, the thoroughness of diagnostic studies, and the surgical skill available. However, fundamental to a study of such factors is the basic question that must be faced: can curable bronchogenic carcinoma be accurately delineated? Do x-ray changes precede symptoms as stated by Rigler,[4] Overholt,[5] and others? Even if they do, can they be picked up reliably by single miniature photofluorograms? Blades[6] advocates biannual, full-sized frontal and lateral roentgenograms for cancer detection. Whether even these are adequate remains to be determined. In the series of 100 survey patients with cancer referred to earlier, only one-tenth were asymptomatic at the time of the first abnormal photofluorogram; only three of these persons survive. If we could study those with symptoms whose photofluorograms were normal, could we improve the prognosis?

What symptoms should cause physicians to undertake meticulous search for lung cancer? Studies based on patients with proved cancer are inadequate because they do not yield information on those without cancer who have the same symptoms. Cytological studies have increased the diagnosis obtained by bronchoscopy and made possible diagnosis by sputum studies, but have they improved the detection of curable cancer? If not, is this due to lack of early referral for cytological study or to lack of early exfoliation of malignant cells? To answer these and other appropriate questions would require a coordinated study on a vast scale. We are conducting a small study in the hope of illuminating some of the practical aspects.

The study was organized during the spring and summer of 1951, and, on Dec. 4, 1951, aided by a small grant from a private foundation and the Philadelphia Tuberculosis and Health Association, the Philadelphia Pulmonary Neoplasm Research Project began to accept patients. A medical advisory committee of 22 physicians was appointed, representing the five Philadelphia undergraduate medical schools and the University of Pennsylvania Graduate School of Medicine. The project plans to study a group of 6,000 men over 45 years of age for a period of 10 years. This is a preliminary report on the study, with initial data on the first 3,945 men surveyed between Dec. 4, 1951, and June 3, 1954. Follow-up information is summarized to Oct. 3, 1954, a period of 4 to 34 months.

SOURCE OF PATIENTS

Every man over 45 years of age who presents himself to the Philadelphia Tuberculosis and Health Association's central unit is automatically referred for interview and photofluorography. The project is then explained and the men are asked if they care to join. Some of these men come in for annual chest films, some because they have heard of the project, some because of anxiety due to symptoms, and many because their physicians recommend roentgenographic examination. Those who come in for follow-up constitute a special segment, since a larger roentgenogram, 14 by 17 in., will be taken because of some possible indication of abnormality on a miniature photofluorogram taken in industry. Of the 3,945 men studied, 625 came for examination on their own initiative; 4 of these had proved lung cancer. Private physicians referred 1,642, or 41.6%, of the men; 23, or 1.4%, of this group had lung cancer. Of the 715 men who were referred because of preemployment examinations, one was found to have lung cancer. Clinics referred 267 men, of whom one had cancer; and 8 of 673 men who came for follow-up were found to have cancer. Since the basic group admitted to the study is not claimed to be one chosen at random, these men are included, at least for the time being. The object of the first screening is to separate out those with roentgenographic abnormalities, so that the development of abnormal shadows may be studied in the balance and correlated with symptoms. Twenty-three men were referred by miscellaneous sources; none of these had proved lung cancer.

METHOD OF STUDY

Each man over 45 years of age reporting for x-ray examination has both inspiratory and expiratory 70 mm. photofluorograms taken. He is then referred for interview by lay interviewers. The interviews are conducted before the roentgenograms are developed or read, so that bias related to the presence of roentgenographic abnormality cannot possibly enter into the questioning. The questionnaire used includes 23 questions, 13 of which pertain to symptoms. Identifying information and smoking habits are recorded. Each man is weighed, and his height is measured. If either roentgenographic abnormality (interpreted as being on a basis other than cardiac, aortic, or minimal inactive tuberculosis) or significant symptoms are found, the patient is recalled for interview by a physician and for taking of a larger roentgenogram. At the time of this interview the situation is carefully explained to the man and to his private physician and recommendations for diagnostic study either on an ambulatory or inpatient basis are made, but no undue pressure is exerted to make the man accept the recommendations. The major effort is slanted toward maintaining rapport over the period of the study.

4. Rigler, L. G.: Roentgen Examination of the Chest: Its Limitations in the Diagnosis of Disease, J. A. M. A. **142**: 773 (March 18) 1950.
5. Overholt, R. H.: Cancer Detected in Surveys, Am. Rev. Tuberc. **62**: 491, 1950.
6. Blades, B. B.: Surgical Management of Tumors of the Lung Discovered in X-Ray Surveys, J. A. M. A. **154**: 196 (Jan. 16) 1954.

Originally, photofluorograms were read by a single chest specialist. Beginning September, 1953, dual reading of all films read abnormal by one reader was inaugurated. Unfortunately, there is insufficient professional time for dual reading of all films. By agreement, all lesions are read as "suspect neoplasm" that could conceivably be due to malignant disease.[7] All men are recalled every six months for repeat photofluorograms and reinterview to pick up changes in symptoms and smoking habits.

Beginning May, 1954, a comparison group of male food handlers over 45 years of age was interviewed at the time of their regular legally required annual chest x-ray examination. These men will not serve as controls, since, because of their anxiety in regard to their jobs, they cannot be expected to answer the questions with the same candor as those men who have voluntarily joined the project.

Only those patients are considered to have proved neoplasms on whom a pathological report is available. A positive Papanicolaou report is accepted as adequate confirmation of a diagnosis, provided photofluorograms, clinical findings, and course are compatible with the presence of unresected lung cancer. Men are considered to have had carcinoma at the time of their first screening if their roentgenograms were abnormal (either primarily or on retrospective review) or if they were studied because of the presence of respiratory symptoms at the time of the first interview.

COMPOSITION OF THE GROUP

Table 1 presents the age and race of the first 3,945 men. Almost half were between ages 45 and 54, one-third between 55 and 64, and the balance over 65 years of age. This is a slight shift toward younger men when compared with 1950 census figures for Philadelphia. The figure for Negroes, 9%, is about 5% below the 1950 census figure. More than one out of every four men had had cough for months or years (1,080 of 3,945, or 27.4%). It had originally been planned to include this symptom as an indication for interview, but such an undertaking would have assumed Herculean proportions, so the symptoms calling for interview by a physician were limited to worsening cough, hemoptysis, unilateral wheeze, or weight loss of more than 10 lb. (4.5 kg.). Symptoms were not present in 2,555 of the 3,945 men, or 64.8%; however, 12 of these were found to have lung cancer. Worsening of cough was found in 125 men, 5 of whom had cancer; hemoptysis in 202, 7 of whom had cancer; unilateral wheeze in 140, 2 of whom had cancer; and weight loss of more than 4.5 kg. in 296 men, 8 of whom had proved lung cancer. Twenty-one of the 1,080 men who had had cough for months or years had proved cancer.

Of the first 3,945 men, 650, or 16.5% had one or more of the four major symptoms. These were divided as follows: 321 among the 1,587 men with abnormal photofluorograms, 20.2%, and 329 among the 2,358 men with "negative" photofluorograms, 14.0%. The high proportion of symptomatic men in our group must constantly be kept in mind. Almost half the men had roentgenographic abnormalities (table 2). The rate of photofluorograms suspected of neoplasm was 2.2% (table 2), about five times the prevalence in the same age group reported by official Philadelphia surveys.[3] There were 559 nonsmokers, representing 14.2% of the group. Tables 3 and 4 analyze the data on smoking habits in the 3,386 smokers.

TABLE 1.—*Distribution of Proved Lung Cancer by Age and Race*

	All Races				White				Nonwhite			
	Total		Proved Cancer		Total		Proved Cancer		Total		Proved Cancer	
Age, Yr.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All ages	3,945	100.0	37	0.9	3,595	100.0	31	0.9	350	100.0	6	1.7
45-54	1,890	47.9	6	0.3	1,716	47.7	4	0.2	174	49.7	2	1.1
55-64	1,415	35.9	22	1.6	1,285	35.7	18	1.4	130	37.2	4	3.1
65-74	520	13.2	8	1.5	480	13.4	8	1.7	40	11.4	..	...
75 and over	120	3.1	1	0.8	114	3.2	1	0.9	6	1.7	..	...

CANCER UNCOVERED BY FIRST SCREENING

On the basis of either the first miniature films or the presence of symptoms at the time of the first interview, 37 proved primary lung cancers were found during a follow-up period of 4 to 34 months. Because of the small size of the group and its symptomatic nature it is unwise to present prevalence rates. The distribution of the first 37 cases by source of referral has been discussed, and distribution by age and race is given in table 1. In contrast to statements in the literature by Ochsner,[8] Berkson and Gage,[9] and others there was no significant difference in prevalence rates between whites and nonwhites. This is in keeping with findings in other Philadelphia surveys[10] and findings by Gittens and Mihaly[11]

TABLE 2.—*Initial Photofluorographic Reading in Relation to Proved Lung Cancer*

	Total		Proved Cancer		No. of Patients Alive
Initial Reading	No.	%	No.	%	
All readings	3,945	100.0	37	0.9	13
Normal	2,358	59.8	2*	0.1	..
Suspect neoplasm	87	2.2	26	29.9	8
Tuberculosis	440	11.2	2	0.5	1
Suspect tuberculosis	323	8.2	2	0.6	1
Other disease	736	18.6	5	0.7	3
Unsatisfactory	1	.....	..	...	..

* On review, these may have been read erroneously.

7. Boucot, K. R.: Early Case Finding in Bronchogenic Carcinoma, J. Am. M. Women's A. **8**: 359, 1953.
8. Ochsner, A.; DeCamp, P. T.; DeBakey, M. E., and Ray, C. J.: Bronchogenic Carcinoma: Its Frequency, Diagnosis, and Early Treatment, J. A. M. A. **148**: 691 (March 1) 1952.
9. Berkson, J., and Gage, R. P.: Calculation of Survival Rates for Cancer, Proc. Staff Meet., Mayo Clin. **25**: 270, 1950.
10. Boucot, K. R., and Sokoloff, M. J.: Preclinical Bronchogenic Carcinoma, Am. Rev. Tuberc. **69**: 164, 1954.
11. Gittens, S. A., and Mihaly, J. P.: Primary Carcinoma of Lung, Dis. Chest **21**: 641, 1952.

as well as Boyce.[12] The prevalence in those younger than 55 was 0.3% and above 55 was 1.5%.

Worsening cough and hemoptysis were the most significant symptoms. Whether or not these will prove to be the most important in the light of five year survival remains to be determined. Two of the 37 men with lung cancer were asymptomatic. Symptoms and their frequency were: cough, months or years, 21; sputum, 19; chest pain, 14; sense of heaviness, 11; cough, days or weeks, 11; weight loss, more than 4.5 kg., 8; hoarseness, 8; hemoptysis, 7; worsening cough, 5; and unilateral wheeze, 2.

Table 2 presents the findings in regard to photofluorographic readings. Since it is the philosophy of the physicians working in the study to consider as "suspect neoplasm" anything that could conceivably be due to tumor, either primarily or secondarily, and to attempt immediate hospitalization of those patients whose films are so classified, it is not surprising to find that the yield of cancer was greatest in the 87 men whose photofluorograms were classified as "suspect neoplasm." However, as time goes on it is possible that the prevalence may increase among those not suspected of having tumors. This has been our experience in other surveys. There had been two men whose initial films had erroneously been interpreted as normal. The errors were picked up by the routine semiannual checkup in one instance and because of symptoms in the other instance. Both men died within one year of their erroneous "negative" photofluorograms.

Resection has been done in 17 of the 37 men with carcinoma, but only 11 of these are alive within the short period of follow-up (table 5). The resectability rate of 46% is an improvement over the 30% rate for 100 consecutive cases from two official Philadelphia photofluorographic units, but there is a question as to whether the present small series will maintain such a rate as the number of cases increases. Teamwork may be a factor; the men themselves have manifested enough interest to join the project, so their cooperation may be above the average. The interviews are conducted by chest specialists with deep conviction in regard to the importance of prompt hospitalization of patients with suspected neoplasms. Referrals for hospitalization are largely made to the teaching hospitals through their representatives on the medical advisory committee, so that beds are made available promptly and diagnostic studies and exploration are carried out as soon as feasible. Even so, the interval between the abnormal photofluorogram and exploration is too long. In the nine men in whom exploratory operations were done and the cancer was found inoperable, the median interval between the photofluorogram and exploration was 36 days. Of the 11 men in whom resection was done and who are living, the median interval between photofluorography and resection was 55 days, while, of the 6 men in whom resection was done and who are dead, the median interval was 81 days.

TABLE 3.—*Type of Smoking in Relation to Proved Primary Lung Cancer*

Type of Smoking	Total No.	Total %		Proved Cancer No.	Proved Cancer %
All men	3,945	100.0		37	0.9
Nonsmokers	559	14.2		..	...
Smokers	3,386	85.8	100.0	37	1.1
Cigarettes only	2,259		66.7	29	1.3
Pipe only	196		5.8	2	1.0
Cigars only	407		12.0	1	0.2
Cigarettes and pipe	89		2.6	2	2.2
Cigarettes and cigars	183		5.6	2	1.1
Pipe and cigars	142		4.2	1	0.7
Cigarettes, pipe, cigars	93		2.7	..	...
Unknown (clerical oversight)	12		0.4	..	...

TABLE 4.—*Degree of Smoking in Relation to Proved Primary Lung Cancer*

Degree of Smoking	Total No.	Total %		Proved Cancer No.	Proved Cancer %
All men	3,945	100.0		37	0.9
Nonsmokers	559	14.2		..	...
Smokers	3,386	85.8	100.0	37	1.1
Occasional	491		14.5	2	0.4
Moderate	1,767		52.2	20	1.1
Heavy	1,116		32.9	15	1.3
Unknown (clerical oversight)	12		0.4	..	...

TABLE 5.—*Resectability and Survival, by Age of Patient*

Age, Yr.	All Cases	Explored: Inoperable	Explored: Resected	Not Explored: Obviously Inoperable	Not Explored: Other	Patients Living *
All ages	37	9	17	10	1	13
45-54	6	1	2	3	..	..
55-64	22	6	11	4	1†	11
65-74	8	2	4	2	..	2
75 and over	1	..	..	1	..	..
Living	13	2	11	..	..	..

* Living from 3 to 29 months after first abnormal finding.
† Patient died suddenly in hospital of undetermined cause, probably cerebrovascular.

TABLE 6.—*Operability and Tissue Diagnosis of Proved Cases of Lung Cancer*

Cell Type	All Cases	Explored: Inoperable	Explored: Resected	Not Explored: Obviously Inoperable	Not Explored: Other	Patients Living *
All types	37	9	17	10	1	13
Squamous	16	4	9	3	..	8
Undifferentiated	16	3	5	7	1†	2
Adenocarcinoma	1	..	1	..	..	1
Alveolar	2	..	2	..	..	2
Unspecified	2	2	..	..	..	..

* Living from 3 to 29 months after first abnormal finding.
† Patient died suddenly in hospital of undetermined cause, probably cerebrovascular. Autopsy revealed undifferentiated carcinoma of lung.

The number of cases is too small to warrant drawing conclusions, but the distribution of the cancer cases by age, resectability, and short-term survival is presented in table 5. The better prognosis of those with squamous cell carcinoma over those with undifferentiated tumors is in keeping with the findings in all reported series. There was one case of adenocarcinoma (table 6).

While our primary purpose has been the clarification of the characteristics of "curable" lung cancer, we included questions on smoking habits in the questionnaire

12. Boyce, F. F.: Causes of Death in Carcinoma of the Lung, in a Large Public Hospital: An Analysis of 186 Fatalities, Dis. Chest 24: 626, 1953.

because of the current controversy. Tables 3 and 4 present the data that show the same relationship to cigarette-smoking as that shown by other investigators.[13] It is certainly of interest that no case has occurred among the 559 nonsmokers, but the number of cancer cases is small. The median number of years smoked was 45.0 for those with cancer, compared to 36.3 for those without cancer. The median age was 62.5 years for those with cancer, compared to 55.4 for those without cancer. We do not imply that this statistical relationship is one of cause and effect.

RESULTS OF HOSPITALIZATION

One hundred fifty, or 3.8%, of the 3,945 men have been hospitalized. Fourteen of the 150 had normal films and were hospitalized only because of symptoms. This is a disappointingly small percentage, 4.3%, of the 329 symptomatic men with normal photofluorograms who should theoretically have been hospitalized. Diagnoses obtained were:

Primary cancer of the lung	38*
Sulcus tumor without tissue diagnosis	1
Atelectasis, cause unknown	1
Active tuberculosis	26
Tracheobronchitis	8
Extrapulmonary cancer (1 esophagus, 1 pancreas, 2 prostate, 5 rectum, 1 sigmoid, 2 stomach, 1 thyroid)	13
Arteriosclerotic heart disease	13
Rheumatic heart disease	1
Aortic aneurysm	1
Bacterial endocarditis	1
Thrombophlebitis	1
Pulmonary embolus	1
Bronchiectasis	6
Lobar pneumonia	1
Friedländer's pneumonia	1
Bronchopneumonia	3
Suppurative disease of lungs	1
Empyema	1
Emphysema	5
Lung abscess	3
Laryngitis	1
Pleural thickening, traumatic	1
Peptic ulcer	1
Cerebrovascular accident	3
Thoracic radiculitis	1
Syphilis	1
Diabetes	1
Psychoneurosis	1
Cirrhosis of liver	1
Epididymitis	1
Pyelonephritis	1
Normal	6
Unknown	5

* One of these was uncovered on rescreening, the lesion having developed after the first screening.

Of the 26 patients with tuberculosis, resection was done in 5; one of these patients had been given a diagnosis of cancer on the basis of two false positive cytological reports based on two bronchoscopies. This patient has done well clinically. Resection was done in two of the six patients with bronchiectasis.

To Oct. 3, 1954, there have been 108 deaths. Causes of death are cited from sources in the following order of priority: autopsy reports, hospital records, and, as last resorts, death certificates. Causes of death were: primary cancer of the lung, 27; extrapulmonary cancer, 15 (adrenal, brain, esophagus, larynx, pancreas, sigmoid, and thyroid, one each; prostate, 2; and rectum and stomach, 3); arteriosclerotic heart disease, 41; cardiovascular accident, 3; aortic aneurysm, peptic ulcer, and tuberculosis, 2; rheumatic heart disease, bacterial endocarditis, thrombophlebitis, cardiac tamponade, brain abscess, bronchopneumonia, cirrhosis of liver, acute hepatic failure, serum hepatitis, pyelonephritis, and obstructive uropathy, one each; and death certificates not yet located, 5.

SUMMARY

In an effort to delineate the characteristics of "curable" cancer of the lung, the Philadelphia Pulmonary Neoplasm Research Project was set up on Dec. 4, 1951. The plan of study calls for following 6,000 men 45 years of age and older by 70 mm. photofluorograms, both inspiratory and expiratory, every six months for a period of 10 years. A questionnaire covering symptoms and smoking habits is completed at each visit. After a follow-up period of 4 to 34 months, 37 proved lung cancers have been detected among the 3,945 men who entered the study during the first two and one-half year period. Not one of these occurred among the 559 nonsmokers.

Woman's Medical College of Pennsylvania (29) (Dr. Boucot).

13. Wynder, E. L., and Graham, E. A.: Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma: A Study of 684 Proved Cases, J. A. M. A. **143**: 329 (May 27) 1950. Doll, R., and Hill, A. B.: A Study of the Aetiology of Carcinoma of the Lung, Brit. M. J. **2**: 1271, 1952; Smoking and Carcinoma of the Lung: Preliminary Report, ibid. **2**: 739, 1950.

CLINICAL NOTES

VENTRICULAR CONTROL BY ARTIFICIAL PACEMAKER FOR SEVEN DAYS WITH RECOVERY

Albert H. Douglas, M.D.
and
William P. Wagner, M.D., Jamaica, N. Y.

Regardless of the cause of death, cardiac activity terminates in either ventricular fibrillation or ventricular arrest. Defibrillation of the heart is not as yet possible without thoracotomy; however, Zoll [1] demonstrated in 1952 that ventricular standstill could be successfully treated by electric stimuli applied to the external chest wall. This author has reported 11 cases in which heart block (Stokes-Adams disease) was treated with an external artificial pacemaker for periods up to 108 hours.[2] In the case presented, a similar artificial pacemaker was used continuously for seven days before a spontaneous idioventricular rhythm appeared.

REPORT OF A CASE

The patient was a 72-year-old man who had been well until March 19, 1954, when he had had a syncopal attack. After a second episode a week later, a diagnosis of heart block had been made, and ephedrine sulfate, 30 mg. four times a day,

Visiting Physician (Dr. Douglas) and Assistant Visiting Physician (Dr. Wagner), Queens General Hospital.

A Morris Clinical Pacemaker, manufactured by Levinthal Electronic Products, Redwood City, Calif., was used in this study.

1. Zoll, P. M.: Resuscitation of the Heart in Ventricular Standstill by External Electric Stimulation, New England J. Med. **247**: 768-771 (Nov. 13) 1952.

2. Zoll, P. M.; Linenthal, A. J.; Norman, L. R., and Belgard, A. H.: Treatment of Stokes-Adams Disease by External Electric Stimulation of the Heart, Circulation **9**: 482-493 (April) 1954.

had been prescribed. There had been no further symptoms until April 2, 1954, when the patient began to have frequent attacks of unconsciousness and convulsions. At that time, with an idioventricular pacemaker in the left bundle branch, an electrocardiogram (fig. 1) showed complete auriculoventricular dissociation and a ventricular rate of 16 per minute. The blood pressure was 90/40 mm. Hg. Treatment consisted of oxygen, by tent, and epinephrine in oil, 2 mg. administered intramuscularly every four hours, supplemented by aqueous

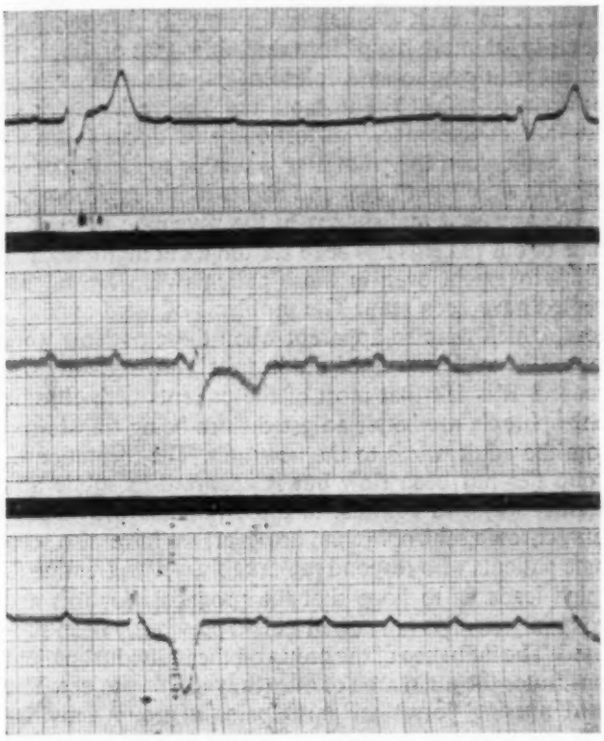


Fig. 1.—Electrocardiographic tracing showing complete auriculoventricular dissociation, with a ventricular rate of 16 per minute.

epinephrine, 0.30 mg. administered intramuscularly as often as needed. When these measures proved ineffective, lanatoside C (Cedilanid), 1.2 mg., was administered intravenously over a four hour period. Stokes-Adams attacks, associated with long periods of ventricular asystole, continued.

The artificial pacemaker became available about 18 hours after the onset of the attacks. At the time of its application the patient was deeply comatose and markedly cyanotic. He displayed Cheyne-Stokes respirations and bilateral Babinski reflexes after a period of ventricular asystole that lasted for more than three minutes. An electrocardiographic tracing made at this time showed asystole of the ventricles for 36 seconds, terminated by response to the artificial pacemaker. The ventricles responded quickly to the artificial stimuli at a voltage of 70 and an initial rate of 90 per minute, reduced in stages to a rate of 50. The patient regained consciousness after two hours and made a complete neurological recovery; however, attempts to discontinue use of the artificial pacemaker were promptly followed by ventricular asystole, loss of consciousness, and clonic movements. Cardiac function and consciousness returned almost immediately when the switch was turned from "Standby" to "On." The rate could be varied at will, but a rate of 50 per minute was found to be effective, and this relatively slow rate gave rise to a minimum of distress caused by rhythmic contractions of the left pectoral muscles. In figure 2*A* the ventricular deflections are masked by broad, exponential-type curves that probably represent condenser leak in the electrocardiograph. In 2*B*, taken with another electrocardiograph, the ventricular deflections are more clearly visualized. Response of the voluntary muscles of the chest wall to the artificial stimuli may distort the electrocardiogram. Responses to the pacemaker were found from apical thrust and radial pulse.

For seven days, from April 3, 1954, to April 10, it was necessary to use the artificial pacemaker to keep the patient alive. Atropine, 0.8 mg. administered parenterally; ephedrine sulfate, 30 mg.; epinephrine in oil, 2 mg. administered intramuscularly; barium chloride, 60 mg. given orally; and isopropylarterenol hydrochloride, 15 mg. given sublingually, were used in turn at four-hour intervals but to no avail. Prinzmetal and Kennamer [3] have successfully used corticotropin to treat patients with heart blocks and myocardial infarction; however, we gave our patient corticotropin, 40 mg. intramuscularly, on two successive days without improvement. On April 9, in desperation, we tried epinephrine in oil, 2 mg. every three hours, in addition to barium chloride, 60 mg. in oral doses every four hours. The next day, finding that the patient had eight spontaneous heartbeats after the artificial stimuli were interrupted, we gave a booster dose of aqueous epinephrine, 0.25 mg. intramuscularly. A minute later the machine was again turned off and a spontaneous idioventricular rhythm with a rate of 30 to 40 beats per minute was evident; this rhythm was maintained, and it was possible to dispense with the artificial pacemaker. The patient was ambulatory and asymptomatic at the time this report was prepared, two months after the use of the pacemaker.

COMMENT

Prolonged use of an external artificial pacemaker, as in the case described, presents a number of problems that do not arise when the pacemaker is to be used for a brief period only. The physician must consider the distress caused by rhythmic contractions of the pectoral muscles, the irritation of the skin from long contact with the electrodes, and the dependence of the patient on an intact electric circuit. At first the patient was disturbed by voluntary muscle contractions, and meperidine (Demerol) hydrochloride, 150 mg., was administered intramuscularly at four-hour intervals; however, after the rate was reduced to 50 per minute the patient tolerated the stimuli

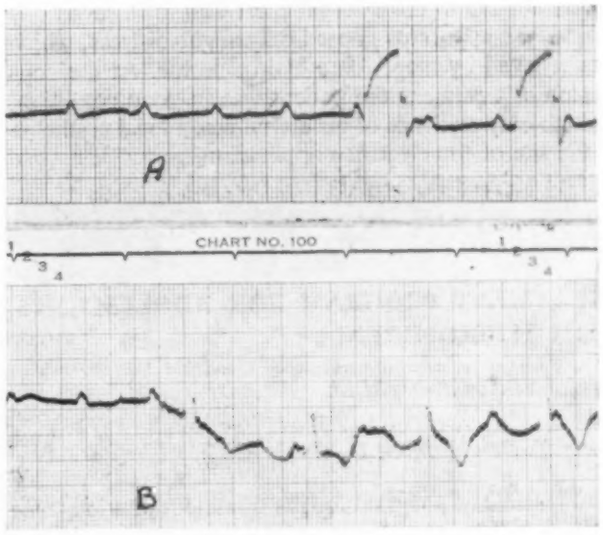


Fig. 2.—The artificial pacemaker was turned off for a five second period, and ventricular control was promptly regained when the machine was again connected. Broad deflections in *A* probably represent a leak in the condenser; ventricular deflections are more clearly seen in *B*, taken with another electrocardiograph.

well without need for analgesia except at night. He was able to eat, drink, urinate, and defecate without difficulty while the pacemaker was functioning.

The electrodes for the pacemaker are two metal plates similar to those used in electrocardiography. The nega-

3. Prinzmetal, M., and Kennamer, R.: Emergency Treatment of Cardiac Arrhythmias, J. A. M. A. **154**: 1049-1054 (March 27) 1954.

tive lead is placed in the region of the cardiac apex. Zoll [4] has suggested that the positive lead be placed on the right side of the chest anteriorly; however, our patient had less distress from voluntary muscle twitching when the positive lead was placed on the left side of the chest posteriorly, directly behind the negative lead. Electrode paste is used to make good contact, and the electrodes are kept in place by a rubber strap. The position of the electrodes should be changed slightly from time to time to minimize skin irritation. At the completion of his week of treatment our patient was left with erythema and pigmentation at the site of electrode application, but there was no ulceration.

The artificial pacemaker operates from the conventional 115 volt, 60 cps, alternating-current power source. It produces positive pulses with a duration of about two milliseconds. The amplitude of these pulses is continuously variable from 0 to 130 volts, and the recurrence frequency is continuously variable from below 50 pulses per minute to above 150 pulses per minute. When the patient's life is dependent for days on the apparatus used, the physician must insure against unpredictable interruption of the stimuli. A second machine in reserve gives some security against mechanical failure. With a suitable converter, power can be obtained from a battery rather than a wall socket; transportation of the patient, with the pacemaker functioning, then becomes possible. There is little doubt that the artificial pacemaker can save lives now lost as the result of ventricular arrest, not only that associated with cardiac disease but also that of reflex origin.

SUMMARY

In a patient who was maintained by an artificial pacemaker applied to the external chest wall for a seven day period, the apparatus caused only slight distress, which was relieved by meperidine hydrochloride. At the conclusion of treatment the patient was in good condition, and the only evidence of his ordeal was a local erythema at the site of the electrode application.

87-14 Midland Parkway (3) (Dr. Douglas).

4. Footnotes 1 and 2.

TREATMENT PROGRAM FOR ADOLESCENTS WITH SCHIZOPHRENIA

Wrenshall A. Oliver, M.D.
and
Harry K. Danielson, M.D., Imola, Calif.

A specialized program for the treatment of adolescent patients with schizophrenia was set up at the Napa State Hospital in 1954. A cottage, providing space for 25 girls and 25 boys, became available and was converted for this purpose. Almost all psychotic adolescents who were in the hospital were gathered together, and a multiple discipline treatment program was put into effect. During the seven months the program has been in operation, attempts to redefine the concept of schizophrenia in this age group have been made. Depending on the age of the patient at onset of schizophrenia and other factors involved, symptoms and dynamics in the adolescent patients differ from those seen in adult patients. Many of them have been sick since early childhood or preadolescence, but others had a more or less acute onset of mental disturbance, having exhibited peculiarities in the home or community for a short period of time and needing hospitalization only recently. The symptom pattern is not a set one, in that individual adolescent patients seem to differ from each other clinically to a greater extent than do adult schizophrenics; however, the nearer they are to chronological maturity the more the picture resembles that of the adult patient with psychosis. Adolescent patients with psychoses seem to reflect the turmoil and bizarre behavior of "normal adolescence," distortion, and disorganization that result when the youngster is unable to identify himself with significant peers and adults in his environment.

The apparent malignancy of the psychotic process in some of our patients has been startling, but minimal signs of improvement even in those patients who are far regressed have been seen. The problems of ward management, which were so apparent when these patients were housed in adult wards of the hospital, have greatly decreased. It is felt that most of the patients with chronic schizophrenia are better adjusted since being transferred from the adult wards to the new unit. The formation of group ties has been slow but is apparent in subtle and indirect ways. In contrast to those patients with malignant, chronic schizophrenia, however, we have also seen some patients who respond remarkably well to treatment, which leads us to hope that the prognosis for this age group in general is not as bad as had previously been supposed. The influence of the group on the individual patient constitutes the main area of our study in this project. The ward nursing personnel participate in group activities both in and out of the ward, including discussion groups, sports, and recreation. In addition to this, recreational therapists conduct several groups during the week. Occupational therapy is held in the ward four mornings and two afternoons a week. Group therapy geared to insight and depending on verbal interchange was largely unsuccessful until crayons, water colors, and other drawing materials were used as relaxants to counteract some of the special resistances met in this group of patients. Patients readily express anxieties and special difficulties in living while working with these materials. Individual therapy is ego supportive together with confrontation with reality problems with ward living as a background. A number of investigations are planned involving the use of amobarbital (Amytal) sodium interviews, psychodrama, puppetry, and other aids to socialization.

The philosophy of the treatment program emphasizes the learning and relearning inherent in group living. Many of these patients have missed great segments of necessary social experience and, because of this, may withdraw from normal contacts with reality after unsuccessful attempts at mastery of the use of special social skills. Weekly staff conferences with ward personnel have been successful in promoting consistency of attitudes toward these patients, emphasizing the all-important role of the psychiatric technicians in encouraging self-expression. It has been learned that problems of ward management become intensified when there is lack of uniformity of attitudes.

From the Napa State Hospital.

Napa State Hospital (Dr. Oliver).

COUNCIL ON FOODS AND NUTRITION

ACCEPTED FOODS

The following product intended for use in sodium-restricted as well as calory-restricted diets has been accepted by the Council. Data regarding composition represent the best available information, which is based on submitted reports of analyses. The Council has requested continuing analytical studies, especially of the sodium content of products intended for use in sodium-restricted diets, because of the natural variations in the composition of processed foods.

JAMES R. WILSON, M.D., *Secretary.*

Gibbs and Company, Inc., Baltimore.

Gibbs Brand Dietetic Pack Cut Green Spears Asparagus.

Ingredients: Green asparagus, packed in water without any added sugar or salt.

Analysis (submitted by manufacturer).—Total solids 3.7%, moisture 96.3%, ash 0.4%, fat (ether extract) 0.1%, protein (N × 6.25) 1.4%, crude fiber 0.7%, carbohydrates other than crude fiber (by difference) 1.1%.

Sodium.—0.90 mg. per 100 gm.

Calories.—0.14 per gram; 4 per ounce.

Use.—In calory-restricted, carbohydrate-restricted, and sodium-restricted diets.

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

S. S. Pierce Company, Boston.

Overland Brand Dietetic Artificially Sweetened Halves Unpeeled Apricots.

Ingredients: Apricots packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 9.6%; moisture 90.4%, ash 0.6%, fat (ether extract) 0.1%, protein (N × 6.25) 0.5%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 8%, sodium 5 mg. per 100 gm., cyclamate calcium 0.076%, and soluble saccharin 0.019%.

Calories.—0.37 per gram; 10 per ounce.

Use.—In low calory, low sodium, and other therapeutic diets.

Overland Brand Dietetic Artificially Sweetened Fruit Cocktail.

Ingredients: Pears, peaches, pineapple, grapes, and maraschino type cherries, packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 9.5%, moisture 90.5%, ash 0.2%, fat (ether extract) 0.1%, protein (N × 6.25) 0.3%, crude fiber 0.4%, carbohydrates other than crude fiber (by difference) 8.4%, sodium 4 mg. per 100 gm., cyclamate calcium 0.064%, and soluble saccharin 0.016%.

Calories.—0.38 per gram; 11 per ounce.

Use.—In low calory, low sodium, and other therapeutic diets.

Overland Brand Dietetic Artificially Sweetened Elberta Freestone Peaches, Sliced and Halves.

Ingredients: Elberta Freestone peaches packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 9.6%, moisture 90.4%, ash 0.4%, fat (ether extract) 0.1%, protein (N × 6.25) 0.4%, crude fiber 0.3%, carbohydrate other than crude fiber (by difference) 8.3%, sodium 4 mg. per 100 gm., cyclamate calcium 0.08%, and soluble saccharin 0.019%.

Calories.—0.37 per gram; 10 per ounce.

Use.—In low calory, low sodium, and other therapeutic diets.

Overland Brand Dietetic Artificially Sweetened Halves Bartlett Pears.

Ingredients: Bartlett pears packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 9.1%, moisture 90.9%, ash 0.2%, fat (ether extract) 0.1%, protein (N × 6.25) 0.2%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 7.9%, sodium 2 mg. per 100 gm., cyclamate calcium 0.057%, and soluble saccharin 0.014%.

Calories.—0.36 per gram; 10 per ounce.

Use.—In low calory, low sodium, and other therapeutic diets.

Snively Groves, Inc., Winter Haven, Fla.

Cypress Gardens Brand Orange Juice for Babies.

This product is prepared from Florida oranges. It is processed and stored according to standards adopted by Snively Groves, Inc. These have been examined and accepted by the Council. The following information was submitted by the company: the juice is finely strained; the peel oil content is maintained at a point below 0.01%; dextrose in small amounts is added, when needed, for the maintenance of a sugar-acid ratio within specified limits; and the product is vacuum packed in 4.5 oz. metal containers. The average ascorbic acid (vitamin C) content for the 1953-1954 pack was 50.1 mg. per 100 ml.

Armour and Company, Chicago, Packer; Gerber Products Company, Fremont, Mich., Distributor.

Gerber-Armour Strained Chicken and Chicken Broth.

Ingredients: Fowls (trimmed of fat, sinews, and connective sheaths) with added chicken broth and salt, prepared under inspection of the Poultry Inspection Division of the U. S. Department of Agriculture.

Analysis (submitted by manufacturer).—Total solids 24%, moisture 76%, ash 0.75%, fat 9.2%, protein (N × 6.25) 13.9%, crude fiber 0.15%, carbohydrates 0.15%, and salt 0.3%.

Vitamins and Minerals	Mg. per 100 Gm.
Thiamine	0.018
Riboflavin	0.134
Niacin	3.22
Vitamin B_6 (pyridoxine hydrochloride)	0.166
Calcium	22
Phosphorus	102
Iron	2.5

Calories.—1.43 per gram; 40.5 per ounce.

Use.—In the feeding of infants, convalescents, and others requiring a soft diet.

H. J. Heinz Company, Pittsburgh.

Heinz Strained Beef and Beef Broth.

Ingredients: Meats (trimmed of fat, sinews, and connective sheaths) with beef broth and added salt, prepared under inspection of the Meat Inspection Division of the United States Department of Agriculture.

Analysis (submitted by manufacturer).—Total solids 19.26%, moisture 80.74%, acidity (as acetic) 0.26%, protein (N × 6.25) 14.31%, fat (ether extract) 3.40%, crude fiber 0.12%, ash 1.05%, salt 0.37%, starch 0.38%.

Vitamins and Minerals	Per 100 Gm.
Thiamine	13 mcg.
Riboflavin	210 mcg.
Niacin	3.5 mg.
Calcium	6 mg.
Phosphorus	150 mg.
Iron	1.66 mg.
Copper	0.17 mg.

Calories.—0.90 per gram; 25.5 per ounce.

Use.—In the feeding of infants, convalescents, and others requiring a soft diet.

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KEROSENE POISONING

Kerosene poisoning occurs infrequently in urban areas. In rural communities, however, where kerosene is widely used for heating and cooking purposes and as a solvent for insecticides, physicians are frequently confronted with kerosene poisoning, particularly in young children. Recently Foley, Dreyer, Soule, and Woll [1] reviewed 101 cases of kerosene poisoning, with two fatalities, observed during the last nine years in five hospitals in northwestern Vermont, which service a population of some 75,000. All the victims were children between 8 months and 2 years of age, and inquiry among physicians in the area indicated that 30 to 40 other patients were treated at home. In most cases, the amount of kerosene ingested was not known, but it was considered unlikely that more than 3 oz. (90 cc.) was taken by any patient.

Symptoms of poisoning fell into two general categories: transitory central nervous system depression and pulmonary involvement. Some of the children were found unconscious or drowsy beside the kerosene container; others became unconscious within an hour after ingesting the kerosene. The central depressant effect caused little clinical concern, possibly because the kerosene swallowed happened to be free from other toxic agents with a predilection for central nervous system poisoning. The critical factor was the pulmonary damage, characterized roentgenologically by rapidly developing bronchopneumonia. Sections of the lungs in a fatal case showed severe necrotizing bronchitis, bronchopneumonia, and hyaline membranes in the alveoli. The other viscera appeared essentially normal. In the nonfatal cases, resolution was rather slow. While there was no unequivocal evidence of residual pulmonary damage, follow-up studies indicated that many of the patients were subject to frequent, prolonged bouts of respiratory infections.

There has long been a difference of opinion as to whether pulmonary damage following kerosene ingestion is due solely to aspiration of kerosene or whether it can also arise by hematogenous spread of kerosene absorbed by the gastrointestinal tract. With a view to resolving these differences, the Vermont investigators conducted a series of animal experiments. When kerosene was introduced into the stomach of rabbits given a small dose of urethan with or without prior ligation of the esophagus the animals became additionally depressed. At autopsy eight hours to two weeks later, intense congestion of the brain was observed but the lungs and the rest of the viscera were entirely normal. The small intestine was frequently dilated with pools of kerosene, but there was no evidence of damage to the mucosa or of droplets outside the intestinal tract. When, however, kerosene was introduced in small quantities into the trachea the animals immediately became dyspneic and irritable and then drowsy. On autopsy 24 to 48 hours later the lungs showed severe hemorrhagic necrotizing bronchopneumonia with hyaline membranes lining the alveoli. Intratracheal injection into cats led to a gradual fall in blood pressure and gradually increasing cyanosis due to accumulation of large amounts of reduced oxyhemoglobin. In all cases, respiration failed before circulation.

These experiments led the Vermont investigators to conclude that kerosene ingestion is not associated with pulmonary damage unless the substance is aspirated and that, in the absence of aspiration, central nervous system depression is the only major toxic effect. Even minute amounts of aspirated kerosene may, however, give rise to severe pulmonary damage. Because of the hazards of pulmonary involvement and since central nervous system depression does not appear to be an important factor with the amounts ordinarily ingested, these investigators warn against the routine use of the stomach pump after kerosene ingestion. They suggest that if gastric lavage is indicated it should be done only after introduction of a tracheal tube with an inflated balloon in order to prevent any aspirated material from entering the respiratory tract.

The conclusions reached by Foley and his associates accord well with those of Waring [2]; Reed, Leikin, and Kerman [3]; Lesser, Weens, and McKey [4] and Richardson and Pratt-Thomas.[5] On the other hand, Deichmann and his associates,[6] on the basis of essentially similar experiments, concluded that pulmonary damage occurs as readily from kerosene absorbed by the gastrointestinal tract and carried to the lungs by way of the blood stream

1. Foley, J. C.; Dreyer, N. B.; Soule, A. B., and Woll, E: Kerosene Poisoning in Young Children, Radiology **62**: 817, 1954.
2. Waring, J. I.: Pneumonia in Kerosene Poisoning, Am. J. M. Sc. **185**: 325, 1933.
3. Reed, E. S.; Leikin, S., and Kerman, H. D.: Kerosene Intoxication, Am. J. Dis. Child. **79**: 623 (April) 1950.
4. Lesser, L. I.; Weens, H. S., and McKey, J. D.: Pulmonary Manifestations Following Ingestion of Kerosene, J. Pediat. **23**: 352, 1943.
5. Richardson J. A., and Pratt-Thomas, H. R.: Toxic Effects of Varying Doses of Kerosene Administered by Different Routes, Am. J. M. Sc. **221**: 531, 1951.
6. Deichmann, W. B.; Kitzmiller, K. V.; Witherup, S., and Johansmann, R.: Kerosene Intoxication, Ann. Int. Med. **21**: 803, 1944.

as by aspiration. These authors also report myocardial, liver, and kidney damage and severe gastrointestinal erosion in a fatal case of kerosene intoxication. Furthermore, Steiner [7] on the basis of clinical studies of 35 cases of accidental kerosene poisoning in children also concluded that ingested kerosene led to severe pulmonary damage and to deleterious systemic effects, which apparently were readily reversible. It is possible that the widely divergent viewpoints are explicable by the relative purity of the kerosene ingested, since Deichmann has shown that various types of kerosene differ considerably in toxic effects.

One of the facets of this study is the emphasis it places on the carelessness involved in the situations in which many of the children obtained the kerosene. Kerosene was obtained from a coffee can catching droppings from a leaky fuel pipe in an oil stove, from a cup containing kerosene used in treating the child for nits, and from a pop bottle left on the kitchen floor. It is apparent from such examples of negligence or ignorance that the public should be made more aware of the hazards to young children offered by the unguarded kerosene container.

PREMATURITY, OXYGEN, AND RETROLENTAL FIBROPLASIA

About 70% of neonatal deaths occur in premature infants. Therefore, since mortality during the first year of life is increasingly concentrated in the neonatal period, reduction of infant mortality has become primarily a problem of keeping premature infants alive. By far the largest factor in the deaths of such infants is impairment of pulmonary ventilation.[1] Thus it is not surprising that additional atmospheric oxygen has been used increasingly in nurseries for premature infants.

Recent and rapidly growing literature [2] reports a significant association between prolonged or concentrated oxygen administration and the retinal vascular changes that may culminate in the membrane formation described by Terry in 1942 as retrolental fibroplasia. On July 1, 1953, a group of investigators from 18 hospitals in various parts of the United States embarked on a cooperative study of this problem, supported by the National Institute of Neurological Disease and Blindness of the U. S. Public Health Service, the National Foundation for Eye Research, and the National Society for Prevention of Blindness. More than 700 infants weighing less than 1,502.5 gm. (3 lb. 5 oz.) at birth and surviving for 48 hours thereafter were entered in this study during its first year. A preliminary report [3] on those born during the study's first six months was presented to the American Academy of Ophthalmology and Otolaryngology, Sept. 21, 1954, because the results were already so impressive. The report, made by Dr. V. Everett Kinsey, chairman of the study's central committee, showed that mortality among premature infants kept in 50% oxygen for several weeks according to the routine then current in many nurseries was not less than that achieved with rigidly curtailed use of oxygen for therapy of significant clinical signs. Prolonged administration of oxygen is, therefore, not essential for survival of most premature infants; indeed the majority of those for whom oxygen use was curtailed required it only during the first three or four days after birth, if at all.

The incidence of both transitory vascular retinopathy and severe cicatricial fibroplasia was significantly correlated with the longer administration of oxygen. Thus, of 53 infants receiving 50% atmospheric oxygen for two weeks or more, 72% showed some degree of retinopathy, which reached a cicatricial status in 25%. Among 245 infants for whom increased oxygen was used only for cyanosis or other clinical indication, retinopathy developed in 30% and only 6% progressed to cicatricial changes. This preliminary survey of results further indicated that the incidence of retrolental fibroplasia may parallel the period of oxygen administration up to the 12th day after birth but that longer administration may not increase the hazard thereafter. The cooperating group will perform a considerable further service if by subsequent investigations it can ascertain safe limits of concentration and duration of oxygen for therapy of the respiratory difficulty so commonly encountered in premature infants. It seems probable that oxygen must act on the retinal vessels in accordance with its tension in the blood, so that pulmonary complications requiring oxygen administration would tend to reduce the danger to the eyes. This awaits demonstration.

In the present state of knowledge, there is certainly no reason to deny small premature infants the benefits of incubator care or of additional oxygen in the amount and duration indicated by relief of cyanosis. And, since retrolental fibroplasia is essentially limited to infants of less than 2,267.9 gm. (5 lb.), there need be no fear of disturbing the eyes of term infants by the oxygen therapy so frequently required for their pulmonary and circulatory disturbances. On the other hand, the evidence is now strong that the exposure of infants to oxygen for even several days is associated with increased incidence of retrolental fibroplasia. Thus, the physician caring for a premature infant should steer a course between preventable anoxia endangering survival on the one hand and the ophthalmologic hazards of unnecessary use of oxygen on the other.

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7. Steiner, M. M.: Syndromes of Kerosene Poisoning in Children, Am. J. Dis. Child. **74**: 32 (July) 1947.

1. Bundesen, H. N., and others: Progress in Reduction of Needless Neonatal Deaths: Challenge to Health Officer and Medical Profession, J. A. M. A. **148**: 907 (March 15) 1952.

2. Ingalls, T. H., and Purshottam, N.: Oxygenation and Retrolental Fibroplasia, New England J. Med. **250**: 621 (April 15) 1954. Lanman, J. T.; Guy, L. P., and Dancis, J.: Retrolental Fibroplasia and Oxygen Therapy, J. A. M. A. **155**: 223 (May 15) 1954.

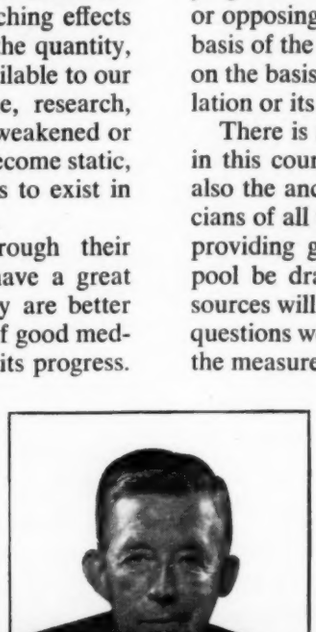
3. Etiology of Retrolental Fibroplasia and Preliminary Report Cooperative Study of Retrolental Fibroplasia, Tr. Ophth. & Otol., to be published.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

The convening of the 84th Congress has again brought into focus certain of the problems of medicine that have economic, social, and political implications. Decisions reached by this Congress may have far-reaching effects on medicine and on the quality, as well as the quantity, of medical care that in the future will be available to our people. The four great pillars of medicine, research, teaching, prevention, and practice, may be weakened or strengthened, since medicine will progress, become static, or regress according to whether it continues to exist in a favorable or an unfavorable environment.

Physicians acting individually and through their county, state, and national organizations have a great responsibility at this time. As a group, they are better informed than others as to the components of good medicine and as to what will advance or retard its progress. Their first duty is to inform themselves and, through their several organizations, to inform each other. It is also their duty and privilege to instruct others outside of the profession as to what, in their judgment, will be the effect for good or evil of various legislative proposals. This is, of course, the privilege of all citizens in a democracy, but it is the particular duty of the physician in matters affecting medicine and medical care. To properly discharge this duty, he must come with clean hands and an understanding mind. Our special knowledge in the field of medicine places this obligation on us. In discharging it, selfish motives should not divert us.



There are those who maintain that physicians have no place in the arena of political action but that they should quietly continue to practice their profession and leave to our elected representatives the responsibility of making legislative decisions affecting medicine. There are others who contend that organized medicine should not engage in such activities and charge that our organizations are not representative of American medicine. Nothing could be further from the truth. The physician has not only the normal concern that every citizen should have for his government and its actions but also the responsibility for making a critical analysis of proposals in the areas of his special knowledge.

Bills have been or will be produced bearing on many aspects of medicine, such as the financing of indigent care, medical care of dependents of members of the armed forces, medical education, extension of the special draft of physicians, changes in the formula for federal grants through the U. S. Public Health Service, reinsurance, and health insurance for federal employees. All, or a portion of the Hoover Commission's report on reorganization of the federal government will no doubt be presented to this Congress. Without considering the merits of any of these proposals at present, I would urge all physicians to study them and to be prepared to form judgment and to exercise their privilege of supporting or opposing them. Conclusions should be reached on the basis of the broad, general impact of such legislation, not on the basis of its effect on any one segment of our population or its political implications.

There is a limited pool of medical personnel available in this country, which includes not only physicians but also the ancillary groups, such as nurses and the technicians of all types that are now such a necessary factor in providing good medical care. It is necessary that this pool be drawn on judiciously so that our medical resources will not be unwisely dissipated. There are certain questions we should ask about any specific proposal. Will the measure improve the distribution and effective use of the components of this composite pool, or will it lead to wasteful dissipation of our total medical resources? Will it provide more and better medical care for more persons? Will it result in economy or waste? Will it extend and make available better physical facilities? Will it advance the art and science of medicine? Will it add to the total effective strength of our nation in the event of foreign aggression?

The answers to these questions are not always obvious. In the field of medical education, for example, we know that medical schools are in need of additional funds. Repeated proposals have been made in the past for a federal subsidy for medical education. Is this need great enough to overbalance the possibility of federal control in any degree of medical education, research, and practice? Incidentally, the amount of your contribution to the American Medical Education Foundation may be a measure of your conviction in this regard.

Without debating this or any of the other proposals that are or may be before Congress, I do emphasize the importance of a careful consideration by members of the medical profession of all proposed measures having medical implications. As specific bills are introduced, they should be studied and their course through the committee hearings followed. Much information is collected and made available to you through the proper offices and agencies of our organization. It is the privilege of each of you to use this, along with all other available information, in reaching a conclusion and determining action. If you do this in accordance with your considered judgment as to what is to the best interests of the people and of the nation, you have discharged your duty as a physician and as a citizen.

WALTER B. MARTIN, M.D., Norfolk, Va.

MEDICAL NEWS

ALABAMA

Appointment of Dean.—The Medical College of Alabama, Birmingham, announces the appointment of Dr. Robert C. Berson, Nashville, to the newly created post of vice-president in charge of medical affairs at the university. Dr. Berson will also serve as dean of the medical college. The present dean, Dr. James J. Durrett, is named consultant to the president on medical center development. Dr. Berson is presently assistant dean and assistant professor of medicine at his alma mater, Vanderbilt University School of Medicine, Nashville, Tenn. He held the same posts at the University of Illinois College of Medicine, Chicago, from 1948 to 1951.

CALIFORNIA

Society News.—Dr. Harold D. Chope, San Mateo, was recently chosen president of the California Conference of Local Health Officers; Dr. Edward L. Russell, Santa Ana, vice-president; and Dr. Ellis D. Sox, San Francisco, secretary.

Dr. Engel to Discuss Ketosis.—Dr. Frank L. Engel, associate professor of medicine, Duke University School of Medicine, Durham, N. C., will consider "The Clinical and Metabolic Significance of Ketosis with Particular Reference to Diabetes" at the meeting of the Alameda–Contra Costa Medical Association, Jan. 31, in the Woodrow Wilson Junior High School, 451–48th St., Oakland.

Course in Photomicrography.—The University Extension and the division of postgraduate medical education at the University of California at Los Angeles School of Medicine announce a new spring laboratory course in photomicrography, planned primarily for the physician, research worker, or medical technician. The course will meet from Feb. 16 to March 23, on Wednesdays, 7:30 to 9:30 p. m., in the third floor auditorium (33–105) of the new U. C. L. A. medical center. Application or requests for information concerning the course should be addressed to Dr. Thomas H. Sternberg, U. C. L. A. Medical Center, Los Angeles 24 (BRadshaw 28911, station 202).

Symposium on Pulmonary Diseases.—The fifth Symposium on Pulmonary Diseases will be presented Feb. 4 to 6 at Los Angeles, with co-sponsorship of the Los Angeles Trudeau Society and the Los Angeles County Tuberculosis and Health Association. Tours of the University of Southern California Cardio-Respiratory Laboratory, with demonstrations of equipment and methods, will be conducted by Dr. Hurley Motley, Los Angeles. Although the symposium covers basic anatomy and physiology, the course is primarily concerned with interpretation and evaluation of pulmonary function studies in problems of interest to the cardiologist and chest specialist. The registration fee, $35, includes luncheons during the symposium. Information may be obtained by writing to 1670 Beverly Blvd., Los Angeles 26.

CONNECTICUT

Hospital News.—In its guest speaker program, Saturdays at 11 a. m. in the amphitheater, the Hartford Hospital presents Dr. E. Myles Standish, attending dermatologist, Hartford Hospital (Dermatology Kodachrome Presentation), Jan. 29 and Dr. William Kaufman, Bridgeport (Dangers of Psychosomatic Diagnosis and Treatment), Feb. 5.

Dr. Hurwitz Appointed Professor.—Dr. Alfred Hurwitz, chief of surgery, Veterans Administration Hospital in West Haven and associate clinical professor of surgery, Yale University School of Medicine, New Haven, has been named professor of surgery at the State University of New York College of Medicine at New York City and director of surgical services at Maimonides Hospital. Dr. Hurwitz served as lieutenant colonel in the Army Medical Corps for three and a half years. He is president of the Connecticut Trudeau Society and secretary-treasurer of the Connecticut Society of the American Board of Surgeons. Dr. William B. Ayers, associate professor of surgery at the state college, will serve as acting director of the Maimonides Surgical Services until Dr. Hurwitz's arrival in the spring.

GEORGIA

Cardiovascular Research and Training Program.—A 12 month postgraduate cardiovascular research and training program is offered by the departments of physiology and pharmacology, Medical College of Georgia, Augusta. The program, supported by the National Heart Institute, U. S. Public Health Service, and the American Heart Association, is under the direction of William F. Hamilton, Ph.D., professor of physiology, and Raymond P. Ahlquist, Ph.D., professor of pharmacology. Graduates in medicine or related sciences who are highly recommended and acceptable to the program directors will be appointed for one year, effective July 1, with the faculty rank of research associate. The stipend will be $3,400, plus $350 for each dependent. For foreign appointees, transportation from point of entry will be furnished. For other appointees, but not their dependents, first class transportation will be provided from the home or institution of residence to Augusta. Return transportation is not provided. This program is intended to accelerate the development of available qualified personnel for research in cardiovascular problems and to provide the opportunity for independent research and publication in this field. A course is available that includes: (1) technical training in various research methods used on man and animals, (2) assistance to qualified investigators in basic research, (3) supervised experience in independent research, and (4) manuscript preparation. Queries or requests for application forms should be addressed to either Dr. Hamilton or Dr. Ahlquist, Medical College of Georgia, Augusta.

ILLINOIS

Fifteenth Symposium on Cancer.—The Illinois division of the American Cancer Society, in cooperation with the Illinois State Medical Society and the Chicago Medical Society, will present the 15th symposium on cancer, Feb. 2 to 4, in Chicago. On Wednesday morning the sessions will be held at Northwestern University Medical School (Thorne Hall, Superior and Lake Shore Drive) and Wednesday afternoon, at the University of Illinois College of Medicine (808 S. Wood St., room 585). The Thursday morning session will be at Mercy Hospital (Stritch School of Medicine of Loyola University, 2537 Calumet Ave.) and the afternoon session at Michael Reese Hospital (Amphitheater, Sarah Morris Hospital for Children, 29th Street and Ellis Avenue). The Friday morning session is scheduled for the University of Chicago Medical School (950 E. 59th St., room M137), and the afternoon session will be held at the Morrison Hotel (79 W. Madison St.). There is no registration fee. Chicago physicians are invited to all sessions.

Chicago

Placards for Emergency Service.—The Chicago Medical Society announces that 1955 placards are now available to each participating physician on the Doctors Emergency Service Panel. The placard gives the physician traffic privileges in areas policed by the Chicago police department but does not give him privileges in zones policed by the Chicago Park District police. Physicians listed on this emergency service panel may have the 1955 placard by writing to Doctors Emergency Service, 86 E. Randolph St., Chicago 1, or applying in person at the society office.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

Fellowships in Statistics.—Three $4,000 postdoctoral fellowships in statistics are offered for 1955-1956 by the University of Chicago. The purpose of these fellowships, which are open to holders of the doctor's degree or its equivalent in research accomplishment, is to acquaint established research workers in the biological, physical, and social sciences with the role of modern statistical analysis in the planning of experiments and other investigative programs and in the analysis of empirical data. The fellowships represent the fifth year of a five year program supported by the Rockefeller Foundation. The closing date for applications is Feb. 15; instructions for applying may be obtained from the Committee on Statistics, University of Chicago, Chicago 37.

Society News.—The North Shore branch of the Chicago Medical Society, in cooperation with the Chicago Heart Association, will offer a program on treatment of congestive failure Feb. 1 at the Edgewater Beach Hotel. A cocktail hour will precede 7 o'clock dinner (for reservations, call Miss Grace, RAndolph 6-4785; $3.50 per plate). At 8 p. m. "Action and Uses of Digitalis" will be presented by Dr. David P. Earle, professor of medicine, Northwestern University Medical School, after which Dr. Ben I. Heller, assistant professor of medicine, Northwestern University Medical School, and physician, medical service, Veterans Administration Research Hospital, will discuss "Electrolytes and Diuretics." All physicians are welcome.

Dinner on Dr. Carlson's 80th Birthday.—In honor of the 80th birthday of Dr. Anton J. Carlson, Frank P. Hixon Distinguished Service Professor emeritus at the University of Chicago, a dinner will be held at the university's Quadrangle Club (57th Street at University Avenue) Jan. 29. Dr. Carlson, who has received the A. M. A. Distinguished Service gold medal and the Distinguished Service citation of the Minnesota State Medical Association, is president of the National Society for Medical Research, Research Council on Problems of Alcohol, and the Chicago Committee on Alcoholism. He has been awarded honorary degrees by eight universities and colleges. Dr. Carlson is the author of some 200 research reports and numerous articles on physiological subjects.

LOUISIANA

Ophthalmologists Meet in New Orleans.—The midwinter convention of the New Orleans Academy of Ophthalmology, Jan. 31 to Feb. 4, will feature a symposium on ocular motility by Drs. Francis Heed Adler, Philadelphia; Harold W. Brown and Philip Knapp, New York; Hermann M. Burian, Iowa City; Frank D. Costenbader, Washington, D. C.; Walter H. Fink, Minneapolis; George P. Guibor, Chicago; and Kenneth C. Swan, Portland, Ore. The program will include round-table discussion periods. The registration fee of $75 includes associate membership in the academy for the year 1955 as well as all other features of the convention.

MASSACHUSETTS

New Chief of Anatomy at Cornell.—Dr. Don W. Fawcett, assistant professor of anatomy at Harvard Medical School, Boston, has been appointed professor and head of the department of anatomy at Cornell University Medical College, New York, succeeding Joseph C. Hinsey, Ph.D., who left the position in 1953 to become director of the New York Hospital–Cornell Medical Center. Dr. Fawcett served as a battalion surgeon with antiaircraft artillery and participated in the Battle for Britain and the Ardennes, Rhineland, and Central Europe campaigns. In 1952 and 1953 he was visiting investigator at the Rockefeller Institute for Medical Research.

MICHIGAN

Personal.—Major William Q. Wolfson, who is on military leave of absence from Wayne University College of Medicine, Detroit, has been appointed chief of professional services, United States Army Hospital, Paris, France. The hospital is located at American Hospital, 63 Avenue Victor Hugo, Neuilly-sur-Seine, Paris, France. Mail from the United States may be sent to A. P. O. 55, New York.

Secretaries-Public Relations Conference.—The annual County Secretaries-Public Relations Conference of the Michigan State Medical Society will convene Jan. 30 at the Sheraton-Cadillac Hotel, Detroit. The morning session will open with a legislative forum that will include (1) "Twenty-Six Ways to Make Friends," a review, report, and prognosis of a 26-point program, and (2) "How to Do It," a talk on how to sell medical public relations by an outstanding sales speaker. After a buffet luncheon, 12:30 p. m., the county secretaries will present four skits and a "buzz session." The program will end with panel discussion on current trends in the practice of medicine.

NEW MEXICO

Personal.—Dr. Payne S. Harris, Los Alamos, has joined the staff of the Los Alamos Scientific Laboratory of the University of California.——Dr. Ethelbert J. Hubbard, Dexter, was recently honored by the Chaves County Medical Society at a dinner in the Nickson Hotel in Roswell for his 50 years of service and practice of medicine. He was presented with a wrist watch by his colleagues. Members of the Eddy County Medical Society were also guests.

Institute of Nuclear Medicine.—The General Dynamics Corporation (445 Park Ave., New York) announces that it has appropriated funds for the establishment of the Institute of Nuclear Medicine at the Lovelace Foundation for Medical Education and Research, Albuquerque. The institute will be under the direction of Dr. W. Randolph Lovelace II, director of the foundation, and an executive director, to be appointed. It is expected that the institute will be concerned with exploratory and applied medical research involving radioisotopes, nuclear radiation, and the development of electronic and nuclear instrumentation and equipment. A special reference library will be devoted to assembling the world literature on nuclear medicine, and a journal of nuclear medicine is projected.

NEW YORK

Death of Executive Secretary.—Mr. Ralph Norton Jr., executive secretary of the Nassau County Medical Society, Mineola, died Dec. 4, 1954.

Society News.—"Endocrine and Metabolic Aspects of Man's Responses to Stressing Circumstances" will be the subject of a talk by Dr. Jerome W. Conn, professor of internal medicine, University of Michigan Medical School, Ann Arbor, before the Rochester Academy of Medicine (1441 East Ave.) at 8:30 p. m., Feb. 1.

Health Museum at Binghamton.—A health museum was opened Jan. 3 at the Roberson Memorial, 30 Front St. in Binghamton, under the joint sponsorship of the Broome County Medical Society; Broome County chapter, American Cancer Society; Health Association of Broome County; Broome County Dental Society; Broome Council Safety Council; and Blind Work Association. Included in the initial display are "You and Your Medical Care," "Where Your Medical Dollar Goes," "Home Accidents," "Seven Danger Signals of Cancer," "Prevention of Blindness," and "Dental Society." Displays in the health division will be changed at periodic intervals. Scheduled for presentation in February is a three-dimensional display about "Medical Superstitions and Fallacies."

New York City

Panel on Impotency.—At the Park East–Park West Clinical Meeting, Jan. 31, 8:30 p. m., a panel discussion, "Male Sexual Impotency: Its Modern Management," will be led by Drs. Harry I. Weinstock, associate psychiatrist, Mount Sinai Hospital, and William L. Ferber, assistant urologist and chief, genitourinary clinic, Mount Sinai Hospital, and visiting urologist, Sydenham Hospital.

Meeting on Cancer.—The New York Academy of Medicine, Fifth Avenue at 103rd Street, will present a panel discussion, "The Role of Vascular Surgery in the Treatment of Tumors,"

Feb. 1, 8:30 p. m. Dr. Jere W. Lord Jr., professor of clinical surgery, New York University Post-Graduate Medical School, will serve as moderator for the following program:

Essential and Nonessential Arteries and Veins; Methods of Blood Vessel Control and Repair, Peter W. Stone, New York.
Principles of Vascular Anastomosis and Methods of Preservation of Arterial Grafts, Charles A. Hufnagel, Washington, D. C.
Pre- and Post-Operative Radiographic Techniques, Ralph A. Deterling Jr., New York.
Vascular Injury in Cancer Surgery, Frank Glenn, New York, and C. Stuart Welch, Albany.
Illustrative Cases, John J. Conley, Ralph A. Deterling Jr., Samuel W. Moore, and Peter W. Stone, New York.

Physicians and medical students are cordially invited.

Hermann Biggs Lecture.—Alcoholism and narcotic addiction will be reviewed in the 30th annual Hermann M. Biggs Memorial Lecture at the meeting of the New York Academy of Medicine, Feb. 3, at 8:30 p. m., in Hosack Hall. Dr. Giorgio Lolli, director, Silkworth Memorial Service at Knickerbocker Hospital, will speak on alcoholism as a medical problem. Dr. Lolli is also director of the Yale Plan Clinic at Yale University, New Haven, Conn., and is consultant on professional services to the Connecticut Commission on Alcoholism. Dr. Harris Isbell, director of the Addiction Research Center at the U. S. Public Health Service Hospital, Lexington, Ky., will lecture on the medical aspects of drug addiction.

Courses on Industrial Medicine.—In cooperation with the New York University College of Engineering, the Institute of Industrial Medicine will offer two courses "designed to deal with some of the basic problems encountered by those concerned with the control of environmental hazards." The courses are planned to be of particular interest to industrial hygienists, safety engineers, industrial physicians, insurance representatives, and others in the field of occupational health and safety. Classes will be held at the engineering school, meeting in the evening for 15 weekly sessions from Feb. 7 to May 27. The course on industrial hygiene (482-A, Mondays from 7 to 9 p. m.) will include lectures and laboratory demonstrations on the engineering control of occupational diseases; factors affecting the health of industrial workers; evaluation and control of exposure to dusts, fumes, mists, vapors, gases, radiation, noise, abnormal temperatures, and other agents; occupational disease control methods; ventilation, air conditions, and local exhaust systems; and relationship to safety engineering, sanitary engineering, and other public health factors involved in the control of environmental health in industrial plants. The industrial hygiene laboratory (482-B, Wednesdays, 7 to 10 p. m.) will be concerned with laboratory methods used in detection of atmospheric contamination; measurement of air flow, illumination, noise, and radiation; and determination of dusts, gases, and solvents in air. Tuition is $66 for each course. Application should be made to the Office of the Dean, New York University Post-Graduate Medical School, 550 First Ave., New York 16.

NORTH CAROLINA

Appoint Chairman of Pediatric Department.—Dr. Jerome S. Harris, professor of pediatrics and associate professor of biochemistry, Duke University School of Medicine, Durham, has been named chairman of the pediatrics department at the medical school and Duke Hospital. Dr. Harris succeeds Dean Wilburt C. Davison, who is James B. Duke Professor of Pediatrics and has been chairman of the department since 1927. Dr. Harris is director of the children's heart clinic at Duke. He is also a member of the American Academy of Pediatrics committee on medical education and chairman of Duke medical school's committee on curriculum. During World War II he was chief of the communicable diseases section of the 65th General Hospital, a North Carolina unit affiliated with Duke medical school. Later he was commanding officer of the Fourth Service Command Medical Laboratory at Ft. McPherson, Ga.

OREGON

University News.—The following appointments were recently announced at the University of Oregon Medical School, Portland: Dr. Edward Colton Meek Jr., assistant professor, and Dr. Abe Oyamada, instructor, department of pathology; Dr. Louis H. Frische Jr., assistant professor of radiology; Benjamin B. Ross, Ph.D., instructor in physiology; Robert W. Goodman, Ph.D., assistant professor of clinical psychology, serving on the staff of the Child Guidance Extension Service; Dr. William M. Clark Jr., instructor in pediatrics; and Dr. John W. L. Bond, instructor in ophthalmology. Dr. Gordon D. Haynie has received an Oregon Heart Association research fellowship for a year of study under the supervision of Dr. Herbert E. Griswold Jr., associate professor of medicine. Dr. Marion L. Krippaehne has been made head of the medical reports department of the outpatient clinic and will hold the rank of clinical instructor in medicine. Dr. Alfonso Escobar, a 1950 graduate of the University of Mexico Medical School, has been appointed research assistant in neurology, and Dr. Larion Onopryenko, a native of Kiev, Ukraine, will hold a similar position in the department of biochemistry.

PENNSYLVANIA

Pilot Program in Mental Health.—A pilot program in applying the basic principles of mental health to a well-functioning public health program has been started by the Fife-Hamill Memorial Health Center of Philadelphia. The program aims "to develop a fuller understanding of the basic principles of mental health in the day-by-day work" of the entire staff, especially physicians, nurses, and others who have direct contact with patients. The Pennsylvania Department of Welfare has allocated funds to provide a psychiatric social worker or mental health consultant for the program. In addition, there is an advisory committee of psychiatrists and others. The program will also be used for the training of students in Jefferson Medical College of Philadelphia and Hahnemann Medical College and Hospital of Philadelphia.

Philadelphia

Personal.—Dr. Geoffrey W. Rake, medical research consultant of E. R. Squibb & Sons, has accepted the chairmanship of the drugs and pharmaceuticals committee of the New York Arthritis and Rheumatism foundation's $500,000 development fund drive for 1954-1955. Dr. Rake is research professor of microbiology in medicine in the medical and veterinary medical schools of the University of Pennsylvania.

Comroe Lecture by Homer Smith.—Kappi Pi chapter of the Phi Delta Epsilon fraternity at the University of Pennsylvania will sponsor its 12th annual Bernard Comroe lecture Feb. 4, 4:15 p. m., in the Medical Alumni Hall. The guest speaker, Homer W. Smith, Sc.D., professor of physiology, New York University College of Medicine, will discuss "The Concentrating and Diluting Mechanisms of the Kidney."

Course on Prevention of Disease.—The University of Pennsylvania School of Medicine offers a new course, "The Early Detection and Prevention of Disease," from March 28 to April 1 at the American College of Physicians, 4200 Pine St. Drs. John P. Hubbard and Norbert J. Roberts will direct the course. The fee for A. C. P. members is $30; for nonmembers, $60. Among others, the officers of instruction include the following out-of-state physicians: Thomas P. Almy, Benjamin H. Balser, J. Scott Butterworth, Frederick Lee Liebolt, and Harold G. Wolff, New York; Robert A. Bell, Dan C. Ogle, and Tom F. Whayne, Washington, D. C.; Milton J. E. Senn, New Haven, Conn.; and Fredrick J. Stare and Paul D. White, Boston.

SOUTH CAROLINA

Dr. Weston Honored.—On Founder's Day, Nov. 4, 1954, the portrait of Dr. William Weston, Columbia, was presented by his colleagues to the Medical College of the State of South Carolina in Charleston, where he formerly served as a faculty member. Dr. Weston, one of the organizers of the American Academy of Pediatrics and the Southern Medical Association, is past councilor from South Carolina to the latter association, past president of the Columbia Medical Society, and was president of the South Carolina Medical Association in 1913. In 1936 he was chosen "Man of the Section" of the Section on Pediatrics in the American Medical Association, and for 20 years he served as Delegate to the Association from the Section.

TEXAS

Personal.—Dr. William A. Spencer, director, Southwestern Poliomyelitis Respiratory Center, Houston, has been named one of the country's 10 "outstanding young men of 1954" by the United States Junior Chamber of Commerce. He was cited for exceptional work in the research, treatment, rehabilitation, and counseling of poliomyelitis victims.

Society News.—The Dallas Academy of Ophthalmology and Otolaryngology will have as its honor guest, Feb. 1, Dr. Michael J. Hogan, San Francisco. At 4 p. m. Dr. Hogan will present "Observations on the Pathology and Management of Certain Postcataract Complications" and at 7:30 p. m., "Certain Observations on the Diagnosis and Management of Patients with Uveitis."

Course in Pediatrics.—The University of Texas Medical Branch, Galveston, in cooperation with the Texas Academy of General Practice, the department of pediatrics, and the Child Health Program of the University of Texas, offers a postgraduate course in pediatrics at the Medical Branch, Feb. 10 to 12. Guest speakers include Drs. Jerome Glaser, pediatric allergist at the University of Rochester School of Medicine, Rochester, N. Y.; John P. Caffey, pediatric roentgenologist of Columbia University College of Physicians and Surgeons, New York; and Edward L. Pratt, chairman of the department of pediatrics at Southwestern Medical School of the University of Texas, Dallas. Special sessions will be devoted to pediatric allergy, pediatric roentgenology, rheumatic fever, pediatric cardiology, parasitism in children, and principles of body fluid therapy.

VERMONT

Dr. Leon Roizin to Speak at University.—Dr. Leon Roizin, Columbia University psychiatric institute, will speak under the sponsorship of the University of Vermont chapter of Alpha Omega Alpha on Feb. 3, 8:15 p. m., at the University of Burlington. His subject will be "Fundamental Physiological and Histopathological Changes During the So-Called Functional Psychoses."

WASHINGTON

Surgeons Meet in Seattle.—The Washington State Medical Association, University of Washington School of Medicine, and Washington State Health Department will offer a refresher course in surgery Feb. 1 to 3. Dr. Carl E. Lischer, assistant clinical professor of surgery, Washington University School of Medicine, St. Louis, will present "Benign Lesions of the Colon" and "Differential Diagnosis of Jaundice and Indications for Exploring the Common Duct" and will lead the discussion at the conclusion of each session. Registrants at the course are invited to attend the annual meeting of the Seattle Surgical Society at the Olympic Hotel, Feb. 4 and 5. Dr. Gustaf E. Lindskog, William H. Carmalt Professor of Surgery and chairman of the department, Yale University School of Medicine, New Haven, Conn., will present "Cancer of the Lung: A Survey of 700 Cases" at the banquet Friday night and "Diseases of the Diaphragm as Viewed by the General and Thoracic Surgeon" at the luncheon Saturday noon.

PUERTO RICO

Pediatricians Meet in Santurce.—The pediatrics section of the Puerto Rico Medical Association will hold the second annual meeting Feb. 3 to 5 at the association's building in Santurce. Dr. Charles F. McKhann, chairman, department of pediatrics, Jefferson Medical College of Philadelphia, will hold seminars on (1) nephrosis in children and (2) inborn errors of metabolism and will deliver lectures on (1) craniosynostosis and (2) recent advances in pediatrics. On Saturday there will be the following conferences: Dr. Guillermo Picó, "Retrolental Fibroplasia"; Dr. A. Ramos Oller, "Surgical Problems in Infants and Children"; and a clinicopathological conference. The meeting will close with a banquet Saturday night.

GENERAL

Pathology Registry.—The National Multiple Sclerosis Society (270 Park Ave., New York 17) announces that arrangements have been made so that neuropathological material of all types may be sent directly to its pathology registry at Montefiore Hospital in the Bronx, New York. A pathologist to whom questions, communications, or material may be directed will be available at all times.

Film Assembly.—The Film Council of America (600 Davis St., Evanston, Ill.) will sponsor the second American Film Assembly, April 4 to 8, at the Waldorf-Astoria in New York. The Golden Reel award will be presented for the best current 16 mm. films submitted in 25 categories, including health and hygiene (films for lay audiences); medical sciences (for professionals only); and mental health. A film users' workshop, designed for the beginner in use of films, will be conducted during the assembly. The workshop sessions will consist of orientation in 16 mm. films, specific problems of utilization, and technical skills. Registration fee for the assembly is $4. Information may be obtained from the Film Council of America.

Catastrophic Accidents.—The Metropolitan Life Insurance Company reports that catastrophic accidents (those involving five or more deaths) took more than 1,200 lives in the United States in 1954 but that the number was one-third less than in the year before and was the smallest in five years. Hurricanes "Carol," killing 68 persons, and "Hazel," about 100, were two of the major catastrophes of the year; tornadoes, which killed about 475 persons in 1953, took comparatively few lives in 1954. The two other major disasters of the year were the crashes of a military plane at Rapid City, Iowa, Aug. 28, and of an international scheduled passenger plane at Idlewild Airport, New York, Dec. 18, each of which killed 26 persons.

Periodical on Chronic Diseases.—With the January issue, the C. V. Mosby Company introduces the *Journal of Chronic Diseases* (editorial office, Medical Arts Building, Baltimore 1) under the editorship of Dr. Joseph Earle Moore, Baltimore. Dr. David Seegal, New York, is associate editor. The editorial board consists of 27 physicians and 5 representatives of nursing, social service, and the lay public. The journal is "devoted to the publication of significant articles dealing with various phases of chronic illness of all age groups. These include studies of the natural history of chronic disease, of early diagnosis, of treatment, of the impact of the chronically ill on the community, of long-term medical and nursing care, of rehabilitation, and of preventive medicine."

Prize for Essay in the History of Medicine.—Henry and Ida Schuman, 2211 Broadway, New York 24, announce an annual award of $250 for an original essay in the history of medicine. Themes may range from fresh interpretations of the classical medical writers and their contributions to social ideas in medicine and/or the relations between medicine and literature. Medical students and interns in any American or Canadian institution are eligible for the award. Papers, about 5,000 words, should be submitted by April 1 to the *Journal of the History of Medicine,* whose editorial board will pass on the suitability of the winning essay for publication in the journal. Judges of the essay award will be: Dr. John F. Fulton, professor of the history of medicine, Yale University School of Medicine, New Haven, Conn.; Genevieve Miller, Cleveland Medical Library, Cleveland; and Dr. George Rosen, professor of public health education, Columbia University College of Physicians and Surgeons, New York.

Society News.—The **New England Obstetrical and Gynecological Society** recently elected Dr. Lewis P. James, Hartford, Conn., president; Dr. Roland E. McSweeney, Brattleboro, Vt., vice-president; Dr. Frederick L. Good, Boston, treasurer; and Dr. Carmi R. Alden, Boston, secretary.——At its annual meeting in Washington, D. C., the **American Occupational Therapy Association** chose Major Ruth A. Robinson (WMSC), U. S. Army, Denver, as president-elect. Miss Henrietta McNary, Milwaukee, serves as president.——At the annual meeting of the **Congress of Neurological Surgeons,** Dr. Donald B. Sweeney, Birmingham, Ala., was elected president; Dr. Bland W. Cannon,

Memphis, Tenn., vice-president; and Dr. Philip D. Gordy, Wilmington, Del., secretary-treasurer.——Newly elected officers of the **Association of State and Territorial Health Officers** include Dr. John W. R. Norton, Raleigh, N. C., president; Dr. Daniel Bergsma, Trenton, N. J., vice-president; and Dr. Franklin D. Yoder, Cheyenne, Wyo., secretary-treasurer.——Newly elected officers of the **Southern Surgical Association** include Dr. Carrington Williams, Richmond, Va., president; Drs. Donnell B. Cobb, Goldsboro, N. C., and Charles M. Edelen, Louisville, Ky., vice-presidents; Dr. George G. Finney, Baltimore, secretary; and Dr. George D. Lilly, Miami, Fla., treasurer. The next meeting of the association will be held at the Homestead, Hot Springs, Va., Dec. 6 to 8.

Meeting of New England Anesthesiologists.—The New England Society of Anesthesiologists will meet in New Haven, Conn., Feb. 4. The morning session will be devoted to an operative schedule and demonstrations at the Grace-New Haven Community Hospital and the Hospital of St. Raphael. After luncheon at Grace-New Haven Community Hospital, the afternoon session will convene at Brady Auditorium, Yale University School of Medicine, where the following program will be presented:

Use of Succinylcholine During Endotracheal Extubation: Oximetric and Electrocardiographic Observations, Ronald S. Lambie, M.R.C.S., England, and Frank Pfaff, Hospital of St. Raphael.

Some Autonomic Reactions Evoked by Cerebral Stimulation in the Conscious Monkey, Jose M. Delgado, Yale University School of Medicine.

Observations on Neuromuscular Function in the Anesthetized Patient, Robert T. McSherry, Grace-New Haven Community Hospital.

Cocktails, 5:30-7 p. m. at the Quinnipiack Club, 221 Church St., will precede a dinner in honor of Dr. Donald F. Proctor, professor of anesthesiology, Johns Hopkins University School of Medicine, Baltimore. At 7:30 p. m. Dr. Proctor will present "Breathing Mechanics and Pulmonary Ventilation During Anesthesia." Discussion will be led by Dr. Robert Nims, chief, pulmonary physiology section, Veterans Administration Hospital, West Haven, Conn.

FOREIGN

Rheumatological Day.—The third Roman Rheumatological Day in Rome, Italy, Feb. 12 and 13, will be organized by the Rome Center of Rheumatology under the auspices of the Italian Society of Rheumatology and the chairmanship of Prof. Antonio Gasbarrini, University of Bologna.

British Medical War Memorial.—Dedication ceremonies were recently held at the Court of Honor of the British Medical Association House in Tavistock Square, London, formally opened by King George V and Queen Mary nearly 30 years ago, at which time the Gates of Remembrance, leading to the court, were dedicated as a memorial to the 574 members of the association killed in World War I. On Nov. 2, 1954, the Archbishop of Canterbury dedicated to the medical men and women of the British Empire and Commonwealth who gave their lives in World War II a sculptured memorial consisting of a central fountain with four heroic-sized figures at its periphery and a bronze fountain jet resembling the staff of Aesculapius at its center. The statues have as their themes Sacrifice, Cure, Prevention, and Aspiration. Sacrifice is represented by Machaon, the legendary son of Aesculapius and a surgeon in the army of Agamemmon, struck by an arrow at the siege of Troy; Cure, by a figure holding a lancet in the right hand and accompanied by two smaller figures, one bearing a dish to receive the blood from cupping, the other a drill such as was once used for trepanning; Prevention, dressed as of Jenner's period, is accompanied by a dog and a sheep representing the sacrificial animals of medical science; and Aspiration, an idealized representation of motherhood, leads a child hopefully into the uncertain future.

DEATHS IN OTHER COUNTRIES

Prof. Auguste Rollier of Berne and Lausanne in Switzerland died Oct. 30, 1954, a month after his 80th birthday. Dr. Rollier, pioneer in heliotherapy of tuberculosis by systematic exposure of affected parts of the body to the rays of the sun, was the founder in 1903 of the sanatorium for tuberculous patients at Leysin near Lausanne. The universities of Berne and Lausanne conferred on Professor Rollier the honorary degree of doctor of medicine.

CORRECTIONS

Spinal Anesthetics.—In table 3 in the article by Dripps and Vandam in THE JOURNAL, Dec. 18, 1954, page 1488, the incidence of headache was printed as 16% following the use of a 20 gauge needle and 18% following use of a 22 gauge needle. These percentages are incorrect and should have been 14% and 9% respectively.

On page 1489 of this article, in the 16th line from the top of the second column, the sentence should have read as follows: "The incidence of postural headache was 7% in males and 14% in females, with an over-all incidence of 11%."

Hiatus Hernia.—In O'Connor and Ritvo's paper on this subject in THE JOURNAL, Jan. 8, 1955, in the legend to figure 1 the term "H, heart border" should have read "H, hiatus hernia border."

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 5-8. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Schroeder Hotel, Milwaukee, Wis., Feb. 24-26. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AERO MEDICAL ASSOCIATION, Hotel Statler, Washington, D. C., March 20-23. Dr. Thomas H. Sutherland, P. O. Box 26, Marion, Ohio, Secretary.

AIRLINE MEDICAL EXAMINERS ASSOCIATION, Hotel Statler, Washington, D. C., Mar. 19-20. Dr. Seymour Fiske, 150 East 71st St., New York 21, Secretary.

AMERICAN ACADEMY OF ALLERGY, Hotel Statler, New York, Feb. 7-9. Dr. Francis C. Lowell, 65 East Newton St., Boston, Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Biltmore Hotel, Los Angeles, Feb. 17-19. Dr. W. J. R. Camp, 1853 West Polk Street, Chicago, Secretary.

AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, Hotel Warwick, Philadelphia, Feb. 10-11. Dr. Leonard J. Goldwater, 600 West 168th St., New York 32, Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Hotel Statler, Los Angeles, Jan. 29-Feb. 3. Dr. J. R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, Fla., Mar. 15-16. Dr. F. Johnson Putney, 1719 Rittenhouse Square, Philadelphia 3, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Drake Hotel, Chicago, Feb. 11-12. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN LARYNGOLOGICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, Fla., Mar. 13-14. Dr. Harry P. Schenck, 326 South 19th St., Philadelphia 3, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Hollywood Beach Hotel, Hollywood, Fla., Mar. 15-17. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel Sherman, Chicago, Feb. 28-Mar. 2. Dr. Jessie E. Crampton, 1790 Broadway, New York 19, Secretary.

AMERICAN OTOLOGICAL SOCIETY, Hollywood Beach Hotel, Hollywood, Fla., Mar. 17-18. Dr. John R. Lindsay, 950 East 59th St., Chicago 37, Secretary.

ATLANTA GRADUATE MEDICAL ASSEMBLY, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 21-24. Mrs. Stewart R. Roberts, 15 Peachtree Place, N.W., Atlanta, Ga., Executive Secretary.

CENTRAL SURGICAL ASSOCIATION, Drake Hotel, Chicago, Feb. 17-19. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, Mar. 1-4. Dr. Norris J. Heckel, 86 East Randolph St., Chicago 1, Secretary.

CONFERENCE ON SILICOSIS AND OCCUPATIONAL CHEST DISEASES, Town Hall, Saranac Lake, N. Y., Feb. 7-9. Dr. Norman R. Sturgis Jr., P. O. Box 551, Saranac Lake, N. Y., Secretary.

CONFERENCE OF TEACHERS OF CLINICAL RADIOLOGY, Drake Hotel, Chicago, Feb. 12. Dr. Laurence L. Robbins, 20 North Wacker Drive, Chicago, Chairman.

DALLAS SOUTHERN CLINICAL SOCIETY, Dallas, Mar. 4-7. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Texas, Secretary.

MICHIGAN CLINICAL INSTITUTE, Sheraton-Cadillac Hotel, Detroit, Mar. 9-11. Mr. W. J. Burns, 606 Townsend St., Lansing 15, Mich., Executive Director.

MID-SOUTH POST GRADUATE MEDICAL ASSEMBLY, Hotel Peabody, Memphis, Tenn., Feb. 8-11. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, New York, March 16-18. Dr. Franklin M. Foote, 1790 Broadway, New York 19, Executive Director.

NEUROSURGICAL SOCIETY OF AMERICA, Del Monte Lodge, Pebble Beach, Calif., Mar. 16-19. Dr. Lester A. Mount, 700 West 168th St., New York 32, Secretary.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY, Municipal Auditorium, New Orleans, Mar. 7-10. Dr. Maurice E. St. Martin, Room 103, 1430 Tulane Ave., New Orleans 12, Secretary.

POST GRADUATE INSTITUTE OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY, Bellevue-Stratford Hotel, Philadelphia, March 29-April 1. Dr. Leandro M. Tocantino, 301 South 21st St., Philadelphia 3, Director.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

DELAWARE, Wilmington, Feb. 5. Dr. Lewis B. Flinn, 503 Delaware Ave., Wilmington 1, Chairman.

KANSAS, Wichita, March 18. Dr. Walter L. Schafer, 401 North Emporia St., Wichita 2, General Chairman.

NEBRASKA, Omaha, Feb. 26. Dr. J. D. McCarthy, 107 S. 17th St., Omaha, Governor.

SOUTHERN CALIFORNIA, San Diego, Feb. 12-13. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

VIRGINIA, Richmond, Feb. 24. Dr. Charles M. Caravati, 807 W. Franklin St., Richmond 20, Governor.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

OHIO, Cleveland, Cleveland and Hollenden Hotels, Feb. 21-24. Dr. Stanley O. Hoerr, 2020 East 93d St., Cleveland, Chairman.

RHODE ISLAND, Providence, Sheraton-Biltmore Hotel, Mar. 3-5. Dr. Henri E. Gauthier, 34 Hamlet Ave., Woonsocket, Chairman.

SOCIETY OF UNIVERSITY SURGEONS, Hotel Shamrock, Houston, Texas, Feb. 9-12. Dr. C. Rollins Hanlon, 1325 S. Grand Blvd., St. Louis, Secretary.

SOUTH ATLANTIC ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, Williamsburg, Va., Feb. 10-12. Dr. C. H. Mauzy, Bowman Gray School of Medicine, Winston-Salem, N. C., Secretary.

SOUTHEASTERN ALLERGY ASSOCIATION, Orange Court Hotel, Orlando, Fla., March 25-26. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 1, S. C., Secretary.

SOUTHEASTERN SURGICAL CONGRESS, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 21-24. Dr. Benjamin T. Beasley, 701 Hurt Bldg., Atlanta, Ga., Secretary.

SOUTHERN NEUROSURGICAL SOCIETY, Dinkler-Tutwiler Hotel, Birmingham, Ala., Feb. 18-19. Dr. William F. Meacham, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

TRI-STATE MEDICAL ASSOCIATION, Hotel Chamberlain, Old Point Comfort, Va., Feb. 21-22. Dr. R. B. Davis, 122 South Greene St., Greensboro, N. C., Secretary.

FOREIGN AND INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Sydney, N.S.W., Australia, Aug. 20-27. For information write: Federal Council of the B.M.A. in Australia, 135 Macquaire St., Sydney, N.S.W., Australia.

BRITISH MEDICAL ASSOCIATION, Representative Meeting, London, England, June 1-4. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

CANADIAN AND BRITISH MEDICAL ASSOCIATIONS, Joint Meeting, Toronto, Canada, June 20-22. Dr. Arthur D. Kelly, 244 St. George St., Toronto, Canada, General Secretary.

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England, June 21-25. Mr. J. H. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, England, Secretary General.

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY, London, England, July 18-23. Dr. C. B. Frisby, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England, President.

CONGRESS OF INTERNATIONAL ASSOCIATION OF PSYCHOTECHNOLOGY, London, England, July 18-23. For information write: Dr. C. B. Frisby, Director, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England.

CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE STUDY OF THE BRONCHI, Stockholm, Sweden, June 18-19. For information write: Dr. J. M. Lemoine, 187 boulevard St. Germain, Paris 7e, France.

CONGRESS OF INTERNATIONAL DIABETES FEDERATION, Cambridge, England, July 4-8. Mr. James G. L. Jackson, 152 Harley St., London, W.1, England, Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF SURGERY, Copenhagen, Denmark, July 23-29. Dr. L. Dejardin, 141 rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS ON RHEUMATISM, Scheveningen, The Hague, Netherlands, June 13-17. Dr. H. van Swaay, Pieter Bothstraat 12, The Hague, Netherlands, Secretary.

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Bournemouth, England, April 26-29. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

HISPANO-PORTUGUESE CONGRESS OF OBSTETRICS AND GYNECOLOGY, Seville, Spain, April 13-16. Dr. M. Recasens, Calle Munoz Olive 7, Seville, Spain, General Secretary.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D. C., U. S. A., April 24-29. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia 4, Pa., U. S. A., Secretary-General.

INTERNATIONAL ANATOMICAL CONGRESS, Paris, France, July 25-30. Prof. Gaston Cordier, 45, rue des Saints-Pères, Paris 6e, France, Secretary-General.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Boca Raton, Fla., U. S. A., Nov. 14-17. For information write: Dr. T. H. Seldon, Mayo Clinic, Rochester, Minn., U. S. A.

INTERNATIONAL CONGRESS OF ALLERGOLOGY, Rio de Janeiro, Brazil, S. A., Nov. 6-12. Dr. Bernard N. Halpern, 197 boulevard St. Germain, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF ANGIOLOGY AND HISTOPATHOLOGY, Fribourg, Switzerland, Sept. 2—. For information write: Dr. Gerson, 4 rue Pasquier, Paris 8e, France.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY, Brussels, Belgium, Aug. 1-6. Prof. C. Liebecq, 17 Place Delcour, Liège, Belgium, Secretary-General.

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY, Lausanne, Switzerland, May 26-31. Professor Hauduroy, 19 rue Cesar Roux, Lausanne, Switzerland, Secretary-General.

INTERNATIONAL CONGRESS OF CRIMINOLOGY, London, England, Sept. 11-18. For information write: Dr. Carroll, 28 Weymouth St., London, W.1, England.

INTERNATIONAL CONGRESS OF EUROPEAN SOCIETY OF HAEMATOLOGY, Freiburg i,Br., Germany, Sept. 20-24. Prof. Dr. L. Heilmeyer, Hugstetter Strasse, 55, Freiburg i,Br., Germany, Chairman.

INTERNATIONAL CONGRESS OF LIBRARIANSHIP AND DOCUMENTATION, Brussels, Belgium, Sept. 11-18. For information write: Dr. A. C. Breycha-Vauthier, Librarian, United Nations, Geneva, Switzerland.

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY, London, England, Sept. 12-17. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London, W.9, England, Secretary.

INTERNATIONAL CONGRESS OF PLASTIC SURGERY, Stockholm, Sweden, Aug. 1-4, and Uppsala, Sweden, Aug. 5. Dr. Tord Skoog, Uppsala, Sweden, General Secretary.

INTERNATIONAL CONGRESS OF UROLOGY, Athens, Greece, April 10-18. Dr. Z. Kaires, 25, rue Voukourestion, Athens, Greece, Secretary General.

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland, May 30-June 3. Capt. J. E. Stone, International Hospital Federation, 10 Old Jewry, London, E.C.2, England, Hon. Secretary.

INTERNATIONAL MEDICAL CONGRESS, Verona, Italy, Sept. 1-4. For information write: % Offices of the International Verona Fair, Piazza Bra., Verona, Italy.

INTERNATIONAL SURGICAL CONGRESS, Geneva, Switzerland, May 23-26. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL SYMPOSIUM ON CARDIOVASCULAR SURGERY, Henry Ford Hospital, Detroit, Michigan, U. S. A., March 17-19. Dr. Conrad R. Lam, 2799 West Grand Boulevard, Detroit 2, Michigan, U. S. A., Chairman of Program Committee.

INTERNATIONAL SYNDICATE OF GYNECOLOGISTS AND OBSTETRICIANS, Meeting Hall of Medical Societies, Paris, France, June 27-28. Dr. Jacques Courtois, 1, rue Racine, Saint-Germain-en-Laye (S & O), France, Secretary-General.

INTERNATIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Paris, France, June 27-28. For information write: Dr. J. Courtois, 1, rue Racine, Saint-Germain-en-Laye, France.

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5. Dr. Mitsuharu Goto, University Hospital, Medical Faculty of Kyoto University, Kyoto, Japan, Secretary-General.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Lima, Peru, S. A., Feb. 14-19. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U.S.A., Executive Director.

LATIN AMERICAN ELECTROENCEPHALOGRAPHICAL CONGRESS, Montevideo, Uruguay, S. A., March 21-24. For information write: Dr. R. Arana-Iniquez, Convencion 1287, Montevideo, Uruguay, S. A.

LATIN AMERICAN NEUROSURGICAL CONGRESS, Montevideo, Uruguay, S.A., March 21-24. For information write: Dr. R. Arana-Iniquez, Convencion 1287, Montevideo, Uruguay, S. A.

MIDDLE EAST MEDICAL ASSEMBLY, Campus of American University of Beirut, Beirut, Lebanon, April 22-24. Dr. John L. Wilson, American University of Beirut, Beirut, Lebanon, Chairman.

NEURORADIOLOGIC SYMPOSIUM, London, England, Sept. 13-17. Dr. R. D. Hoare, National Hospital, Queen Square, London, W.C.1, England, Secretary.

PAN-AMERICAN ACADEMY OF GENERAL PRACTICE, Lima, Peru, S. A., Feb. 11-25. Dr. Arturo Martinez, 54 East 72nd St., New York 21, N. Y., U. S. A., Secretary.

VENEZUELAN CONGRESS OF MEDICAL SCIENCES, Caracas, Venezuela, S. A., Nov. 18-26. Dr. A. L. Briceno Rossi, Apartado 4412, Ofic. del Este, Caracas, Venezuela, S. A., Secretary General.

WORLD CONGRESS OF ANESTHESIOLOGISTS, Scheveningen, Netherlands, Sept. 5-10. For information write: Mr. W. A. Fentener van Vlissingen, World Congress of Anesthesiologists, Bilthoven, Netherlands.

WORLD MEDICAL ASSOCIATION, Vienna, Austria, Sept. 20-26. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II in 1955.* Feb. 1-2, April 19-20 (Part II only), June 21-22, Sept. 6-7 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination. New candidates should apply by formal registration; registered candidates should notify the board by letter and forward their fees. Exec. Sec., Dr. John B. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* July 15. Final date for filing applications was Jan. 15. *Oral.* Colorado Springs, March 27-31. New York City, Oct. 23-27. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, June 30. *Oral.* Washington, D. C., Oct. 14-16. To be eligible, candidates must complete 36 months of training by October 1. Final date for filing application is March 15. Exec. Sec., Miss Janet Newkirk, 129 E. 52nd St., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New Orleans, Feb. 1-4; Philadelphia, May 4-5; Washington, D. C., May 6-7; Portland, Ore., Sept. 14-16; Chicago, Nov. 30-Dec. 1. *Subspecialties. Gastroenterology.* Philadelphia, April 22-23. *Cardiovascular Disease.* Chicago, Nov. 30. The closing date for acceptance of applications for gastroenterology is Feb. 1, and for cardiovascular disease the closing date is June 1. Exec. Sec., Dr. William A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Fall, 1955. Final date for filing applications is May 1. Sec., Dr. Leonard T. Furlow, 600 South Kingshighway, St. Louis 10.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I, Written Examination and Review of Case Histories.* Various cities of the United States and Canada and military centers outside the continental United States, Feb. 4. Final date for filing applications was Oct. 1. *Part II, Oral Examination.* Chicago, May 12-20. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various cities, Jan. 24-25. Final date for filing application was July 1, 1954. *Practical.* Philadelphia, May 27-30; Chicago, Oct. 9-14. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I.* Various locations, April. Final date for filing applications was Nov. 30, 1954. *Part II.* Los Angeles, Jan. 27-28. Sec., Dr. Harold A. Sofield, 122 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: Richmond, Va., March 6-10. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Written.* Houston, April 4-6. Sec., Dr. William B. Wartman, 303 E. Chicago Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: *Written.* Selected locations, Jan. 14. This was the only written examination which will be given during 1955. *Oral.* New Orleans, March 4-6; Detroit, April 1-3; New York City, June 10-12; Chicago, Oct. 7-9; and Washington, D. C., Dec. 2-4. Admin. Sec., Mrs. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: Philadelphia, June 5-6. The final date for filing applications is March 1. Sec., Dr. Earl C. Elkins, 30 N. Michigan Ave., Chicago 2.

AMERICAN BOARD OF PLASTIC SURGERY: *Entire Examination.* Washington, D. C., April 30-May 2. Final date for filing case reports was Jan. 1. Corres. Sec., Miss Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Certification in Public Health.* Berkeley, New York, Boston, Baltimore, Minneapolis, and New Orleans, April 14-15; Kansas City, Mo., Nov. 10-12. Sec.-Treas., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* Philadelphia, May 7. It is possible that simultaneous examinations may be held in two other cities depending upon the geographic locations of candidates. *Part II.* Philadelphia, Sept. 17. Sec., Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, N. Y.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New Orleans, Feb. 28-March 1; San Francisco, mid-October; New York City, December. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Chicago, week of May 22; week of Dec. 4. Final date for filing applications for the spring examination was Dec. 1. Those candidates who will complete the required three years' training by June 30 will be eligible to appear for examination in May, and those candidates who will complete their training by Dec. 31 will be eligible to appear for examination in the fall. Sec., Dr. B. R. Kirklin, 429 First National Bank Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I.* March 30. *Part II.* New Orleans, Jan. 17-18; Baltimore, Feb. 14-15; Cincinnati, March 14-15; San Francisco, April 18-19; Boston, May 16-17; Philadelphia, June 13-14. Sec., Dr. John B. Flick, 255 S. Fifteenth St., Philadelphia 2.

THE BOARD OF THORACIC SURGERY: *Written.* Feb. 25. Final date for filing applications was Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Ave., Detroit 2.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Sunday, Jan. 30

CBS-TV, 4:30 p. m. EST. "Search" reports on a French paraplegic war veteran's treatment at Institute for Physical Medicine and Rehabilitation, New York.

ABC-TV, 9:15 p. m. EST. "Horizons."

Monday, Jan. 31

NBC-TV, 9 p. m. EST. "Medic" tells of a patient with hemophilia in a program called "A Time to Be Alive."

MAGAZINES

Saturday Evening Post, Jan. 15, 1955

"The Doctor Who Solves Old Murders," by Norman Carlisle

Wilton Krogman, Ph.D., professor of physical anthropology, graduate school of medicine, University of Pennsylvania, has a thorough knowledge of bones and is in constant demand as a consultant by police and the medical profession.

Woman's Home Companion, February, 1955

"Victory over Mental Illness," by Albert Q. Maisel

The author reports on use of chlorpromazine and reserpine in treatment of mental illness, calling this use of chemotherapy "some of the most heartening medical news of our lifetime." He also tells of experiments with LSD (*d*-lysergic acid diethylamide) for "tracing naturally occurring schizophrenia to its physical source," for aiding in "catching the potentially mentally ill early," and for helping "patients under psychotherapy to spill deeply repressed information of great value to their physicians."

"Our Handicapped Babies—Surgeons Can Help Them," by Edward T. Wilkes, M.D.

Dr. Wilkes, assistant clinical professor of pediatrics, New York University–Bellevue Post-Graduate Center, says there have been "many dramatic advances in infant surgery within the last few years. Now all sorts of malformations—upside-down stomachs, freak hearts, badly curved spines, incomplete throats, as well as harelip, cleft palate, clubfoot —even some cases of water on the brain, may be corrected."

DEATHS

Andrews, Mitchell McCauley ⊕ Orlando, Fla.; University and Bellevue Hospital Medical College, New York, 1917; on the staff of the Orange Memorial Hospital; died in St. Louis Oct. 20, aged 71, of coronary thrombosis.

Angstadt, Norman George ⊕ Reading, Pa.; Jefferson Medical College of Philadelphia, 1935; formerly acting director of the division of maternal and child hygiene of the West Virginia State Department of Health; director of local health service for the state of West Virginia from 1938 to 1947; died in St. Joseph's Hospital Sept. 18, aged 45, of cardiorenal disease.

Barrett, Raymond Lathrop ⊕ Springfield, Mass.; Columbia University College of Physicians and Surgeons, New York, 1921; fellow of the American College of Physicians; served during World War II; attending physician at Springfield Hospital; consultant in gastroenterology at the Springfield Health Department Hospital and at Cooley Dickinson Hospital in Northampton; died Dec. 10, aged 60, of cancer.

Bennett, Joseph Samuel ⊕ Kansas City, Mo.; University of Kansas School of Medicine, Kansas City, Kan., 1922; member of the American Academy of General Practice; affiliated with Research Hospital in Kansas City, Mo., and Independence (Mo.) Sanitarium; died Dec. 6, aged 68, of coronary occlusion.

Bills, Leroy Fenton ⊕ Culver, Ind.; Medical College of Indiana, Indianapolis, 1904; served during World War I; for many years practiced in Gary, where he was at one time health commissioner, and on the staffs of the Methodist Hospital and the Mercy Hospital; died Oct. 26, aged 74, of cancer.

Blodgett, Pliny Russell ⊕ Chicago Heights, Ill.; University of Illinois College of Medicine, Chicago, 1916; immediate past president of the Illinois Academy of General Practice; served during World Wars I and II; formerly health officer; affiliated with St. James Hospital, where he served as chief of staff; died Dec. 20, aged 62, of coronary occlusion.

Brawner, Leon Edward ⊕ St. Simons Island, Ga.; Atlanta College of Physicians and Surgeons, 1911; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; served during World War I; at one time practiced in Atlanta, where he was on the staffs of the Georgia Baptist, Grady, and Piedmont hospitals; active member of the Glynn-Brunswick Hospital in Brunswick, where he died Dec. 4, aged 66, of heart disease.

Buchanan, John P. ⊕ Montgomery, Ala.; Medical College of Alabama, Mobile, 1892; died Dec. 4, aged 85, of cerebral hemorrhage.

Chisholm, George Bruce, Weston, Mass.; Tufts College Medical School, Boston, 1933; certified by the National Board of Medical Examiners; assistant resident in anesthesia at Massachusetts Memorial Hospitals in Boston, where he died Dec. 7, aged 47, of an old brain injury.

Coleman, William Reed, Lancaster, Ohio; Starling Medical College, Columbus, 1898; at one time health officer of Fairfield County; died Nov. 22, aged 72.

Cooper, Edwin Harold, Washington, D. C.; Hahnemann Medical College and Hospital, Chicago, 1905; served during World War I; formerly affiliated with the Veterans Administration; died in the Garfield Memorial Hospital Dec. 1, aged 76, of carcinoma of the pancreas.

Corrigan, Harry Bernard ⊕ Reading, Pa.; Jefferson Medical College of Philadelphia, 1924; died Dec. 16, aged 55, of coronary occlusion.

Corrigan, James Edward ⊕ Patchogue, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1937; served during World War II; on the staffs of the John T. Mather Memorial and St. Charles hospitals in Port Jefferson; died Dec. 9, aged 44, of acute coronary thrombosis.

⊕ Indicates Member of the American Medical Association.

Cottis; Eliza Fancher, St. Cloud, Fla.; Cornell University Medical College, New York, 1905; died in Jamestown, N. Y., Oct. 4, aged 77, of abdominal cancer.

Duggan, Cornelius ⊕ Bethel, N. Y.; Long Island College Hospital, Brooklyn, 1891; since 1916 health officer of the town of Bethel; died Nov. 17, aged 85, of coronary thrombosis.

Ernest, F. James Mahon, Portland, Ore.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1904; member of the American Psychiatric Association; served overseas during World War I; for many years on the staff of the Veterans Administration Hospital; died Nov. 21, aged 80.

Fowler, Joseph, Osawatomie, Kan.; University Medical College of Kansas City, 1907; died Oct. 25, aged 72, of cerebral hemorrhage.

Hanley, William Joseph ⊕ West Allis, Wis.; Marquette University School of Medicine, Milwaukee, 1914; served during World War I; for 16 years resident physician at the Milwaukee County Hospital, where he died Nov. 23, aged 63.

Jackson, Francis Frederick, Decoto, Calif.; College of Physicians and Surgeons of San Francisco, 1903; died Oct. 28, aged 86, of coronary occlusion.

Kolmer, George August Leonard ⊕ Salem, Va.; Johns Hopkins University School of Medicine, Baltimore, 1913; served during World Wars I and II; formerly county medical examiner and for many years health officer for Salem; vice-president of Farmers National Bank; trustee, Roanoke College; died Nov. 21, aged 73, of heart disease.

McCown, Oswald Stuart Jr. ⊕ Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1931; served during World War II; died Nov. 15, aged 46, of a heart attack.

McCrummen, Thomas Dodson ⊕ Austin, Texas; University of Texas School of Medicine, Galveston, 1923; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; on the staffs of the Brackenridge Hospital, St. David's Hospital, and Sexton Infirmary, where he died Oct. 28, aged 56, of prostatic hypertrophy, pulmonary emboli, and coronary sclerosis.

McNeer, Thomas Theodore ⊕ Kingsport, Tenn.; University of Pennsylvania School of Medicine, Philadelphia, 1913; member of the Southeastern Surgical Congress; died Nov. 18, aged 66.

MastAndrea, Lewis Anthony, Chicago; Northwestern University Medical School, Chicago, 1920; died Dec. 6, aged 66, of acute coronary thrombosis.

Melvin, John Leonard ⊕ Shuqualak, Miss.; University of Nashville (Tenn.) Medical Department, 1901; died Nov. 13, aged 81, of arteriosclerotic heart disease.

Muller, Fred Herman ⊕ Chicago; Bennett Medical College, Chicago, 1909; past president of the Chicago Medical Society; at one time vice-president of the Illinois State Medical Society; member of the House of Delegates of the American Medical Association from 1946 to June, 1954, inclusive; affiliated with the Evangelical Hospital, of which he was a past chief of staff; died in the Presbyterian Hospital Nov. 23, aged 68, of bronchopneumonia and cancer.

Nocilla, Benjamin ⊕ New York City; University and Bellevue Hospital Medical College, New York, 1913; served during World War I; on the staff of St. Francis Hospital, where he died Oct. 4, aged 66, of dissecting aneurysm of the thoracic aorta.

Oberlander, George James, Boston; College of Physicians and Surgeons, Boston, 1914; died in Amherst Dec. 15, aged 71.

Overstreet, Walter Cunningham, Jonesboro, Ark.; St. Louis University School of Medicine, 1918; past president of the Craighead-Poinsett Counties Medical Society; on the staff of St. Bernard's Hospital; died Dec. 3, aged 60, of cerebral hemorrhage.

Page, George Thornton ✠ Brookline, Mass.; Harvard Medical School, Boston, 1896; member of the New England Ophthalmological Society; died Oct. 7, aged 84, of heart disease.

Pahmeier, John William ✠ Sandborn, Ind.; University of Louisville (Ky.) Medical Department, 1913; served during World War I; for nine years county health officer; died Oct. 8, aged 69, of complications arising from injuries received in an automobile accident in July, 1953.

Parrott, James Clifford ✠ San Francisco; Stanford University School of Medicine, San Francisco, 1920; associate clinical professor of pediatrics at his alma mater; member of the American Academy of Pediatrics; died Nov. 10, aged 62, of myeloma.

Patterson, George Thomas, Cactus, Texas; Memphis (Tenn.) Hospital Medical College, 1898; died Oct. 29, aged 84.

Riggs, Harold Walter ✠ Ann Arbor, Mich.; University of Michigan Medical School, Ann Arbor, 1923; member of the American Psychiatric Association; served during World War I; on the staffs of the Mercywood Sanitarium and St. Joseph's Mercy Hospital, where he died Nov. 27, aged 60, of hypertensive cardiovascular disease.

Rosenblum, Philip Sheridan ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1916; assistant professor of urology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; member of the American Urological Association; specialist certified by the American Board of Urology; served during World War I; medical director and chief of urology of the Eastern Division of the Einstein Medical Center, where he died Dec. 12, aged 60, of myocardial infarction.

Scheckner, Leo ✠ Tacoma, Wash.; Medizinische Fakultät der Universität, Vienna, Austria, 1937; served overseas during World War II; on the staffs of the Tacoma General, Doctors, and Pierce County hospitals and of St. Joseph's Hospital, where he died Nov. 19, aged 42, of brain tumor.

Scott, Raymond G. ✠ Geneva, Ill.; Rush Medical College, Chicago, 1897; fellow of the American College of Surgeons; many times health officer; past president of the Kane County Medical Society; on the staff of the Community Hospital; died Dec. 8, aged 79, of cerebral thrombosis and arteriosclerosis.

Seymour, Frances Isobel ✠ New York City; Medical College of Virginia, Richmond, 1928; also a graduate in pharmacy; medical director of the National Research Foundation for Eugenic Alleviation of Sterility, Inc., in Nesconset, N. Y.; author of "Rice, Dietary Controls, and Blood Pressure" published in 1951; died in the University Hospital Dec. 17, aged 53, of cerebral hemorrhage.

Sheedy, John James ✠ Plainfield, N. J.; Temple University School of Medicine, Philadelphia, 1930; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; served during World War II; affiliated with the Wills Eye Hospital and St. Mary's Hospital in Philadelphia and the Muhlenberg Hospital, where he died Dec. 7, aged 51, of arteriosclerotic heart disease.

Smith, Hal Clarke ✠ Grand Island, Neb.; Lincoln Medical College of Cotner University, 1904; served during World War I; died in the Veterans Administration Hospital Nov. 2, aged 72, of myocardial infarction.

Steffen, Richard Charles, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; on the staff of the Illinois Masonic Hospital, where he died Dec. 2, aged 74, of arteriosclerotic heart disease.

Stephenson, John Edward ✠ Clarksburg, W. Va.; Jefferson Medical College of Philadelphia, 1927; served during World War II; health officer of Clarksburg from 1931 to 1936; on the staff of St. Mary's Hospital; died Nov. 25, aged 51, of acute coronary occlusion.

Stern, Isadore D. ✠ Houghton, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1909; on the staff of St. Joseph Medical Center, Hancock, where he died Nov. 21, aged 70, of coronary disease.

Stinson, William Miller ✠ Jacksonville, Fla.; Memphis (Tenn.) Hospital Medical College, 1900; died in the Memorial Mission Hospital in Asheville, N. C., Oct. 24, aged 81, of bronchopneumonia.

Strickland, Grady Monroe Jr., Williamsburg, Va.; Medical College of Virginia, Richmond, 1950; served as resident at the Eastern State Hospital; died Oct. 27, aged 31.

Toland, J. Hart ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1912; served during World Wars I and II; assistant medical director of the medical division of the board of public education, with which he was connected for 28 years; specialist certified by the American Board of Pediatrics; member of the board of directors of the Philadelphia medical alumni of the University of Pennsylvania; died Dec. 10, aged 64.

Tracy, Wallace Burtram, Toledo, Ohio; Miami Medical College, Cincinnati, 1903; served during World War I; formerly on the staff of the Ohio State Sanatorium in Mount Vernon; staff physician at Toledo State Hospital, where he died Dec. 6, aged 75, of arteriosclerotic heart disease.

Tralle, George Markham, Montebello, Calif.; University Medical College of Kansas City, Mo., 1899; died in the Queen of Angels Hospital in Los Angeles Nov. 13, aged 83, of coronary thrombosis.

Trump, Leland Lewis, Milwaukee; Milwaukee Medical College, 1912; died in the Milwaukee County Hospital Nov. 14, aged 69, of arteriosclerotic heart disease and hypertension.

Tuten, John King Garnett, McCormick, S. C.; University of Georgia Medical Department, Augusta, 1912; served during World War I; drowned Sept. 23, aged 65.

Vella, Paul D. ✠ Atlanta, Ga.; New York University College of Medicine, 1939; served as a surgeon with the 517th Parachute Infantry Regiment in Italy during World War II and was decorated with the Bronze Star with Oak Leaf Cluster and the Purple Heart; died Dec. 28, aged 40.

Warterfield, Floyd Edward ✠ Muskogee, Okla.; University of Arkansas School of Medicine, Little Rock, 1899; honorary member of the American Urological Association; served as president of the Muskogee County Medical Association, of which he was a life member; served during World War I; on the staffs of the Muskogee General and Oklahoma Baptist hospitals; died Nov. 10, aged 84, of arteriosclerosis.

Watson, Robert Hunter ✠ Georgiana, Ala.; Medical College of Alabama, Mobile, 1905; died Nov. 18, aged 80.

Webber, Wolfert Gerson, Amherst, Mass.; Harvard Medical School, Boston, 1913; formerly city epidemiologist for Boston and at one time assistant state public health commissioner; served in France during World War I; on the courtesy staff, Cooley Dickinson Hospital in Northampton; died Dec. 9, aged 65, of hypertensive heart disease.

West, George Richard ✠ Sarasota, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1883; member of the Tennessee State Medical Association; fellow of the American College of Surgeons; at one time practiced in Chattanooga, Tenn., was past president of the Chattanooga and Hamilton County Medical Society, and was on the staff of the Erlanger Hospital; died Nov. 28, aged 96.

Yeckel, Herbert Carl ✠ Syracuse, N. Y.; Syracuse University College of Medicine, 1913; clinical professor emeritus of medicine at his alma mater; affiliated with the Veterans Administration Hospital; died in the University Hospital Nov. 25, aged 66, of myocardial infarction.

FOREIGN LETTERS

AUSTRIA

Cytological Diagnosis of Carcinoma of Stomach.—At the meeting of the Society of Physicians of Vienna held on Oct. 15, 1954, Dr. Kuttelwascher said that a procedure had been developed that facilitated obtaining fresh material for cytological examination and also the production of suitable microscopic specimens. Cells are obtained by spraying the entire gastric mucosa with a fine jet of water. A special gastric tube was constructed for this purpose. The specimens are prepared by means of a filtering device, in which the fluid obtained from irrigation of the stomach is pressed through a filter and all corpuscular elements are deposited on this filter. Felting or matting of the cells on the filter is prevented by interposing a layer of precipitated calcium carbonate, which, after filtration, is dissolved with a hydrochloric acid–alcohol mixture. The method appears to be a valuable addition to the roentgenologic examination, because it provides the best results in juxtapyloric carcinomas.

Hyperadrenalism and Thromboembolism.—At the same meeting, Dr. Chwalla reported on studies made of 290 autopsies in cases of embolism. He found enlargement of the adrenals with preservation of normal anatomic structure in 25%; in 106 autopsies in cases of venous, arterial, and cardiac thrombosis he found similar adrenal enlargement in up to 44%. Conversely, studies on 796 patients with adrenal adenomas, hyperplasia of the adrenal cortex or medulla, enlargement of the adrenals, or with a combination of these changes revealed a more than average incidence of embolism (up to 18%), and, similarly, 2,262 persons with various hyperadrenal disorders and constitutional changes had an elevated incidence of embolism (up to 23%), whereas the incidence of embolism in those with hypoadrenalism was below the average or surprisingly low. Since the accompanying pathological conditions in patients with thrombosis and embolism resemble those of patients with hyperadrenalism, and since the administration of cortisone and corticotropin frequently is followed by thromboembolism, in that both hormones as well as extracts of the adrenal cortex shorten the coagulation time of the blood, it was concluded that hyperfunction of the adrenals favors the development of thrombosis and embolism and gives indications of this danger.

Congenital Atresia of the Duodenum.—At the meeting of the Society of Physicians of Vienna held on Oct. 29, 1954, Dr. H. O. Jürgenssen said that among the 34 children with congenital atresia of the digestive tract observed at the Children's Clinic of the City of Wien-Glanzing since 1945, there were 11 with congenital atresia or stenosis of the duodenum. Seven of these were operated on, with one death. The prerequisites of a promising surgical intervention are: (1) early diagnosis and admittance to a clinic equipped to treat such cases; (2) careful preparation for the operation by normalization of the water and electrolyte economy by continuous drip infusion, transfusion of plasma or blood, administration of antibiotics and analeptics, and by aspiration of the suprastenotic parts of the intestinal tract according to Wangensteen's method; and (3) careful postoperative treatment, which should be concerned chiefly with the establishment of normal function. Generally the children were admitted at the end of the first week of life and with different diagnoses. The most important diagnostic aid is a roentgenologic examination, which should be carried out in every newborn infant with persistent vomiting. Iodized oil should serve as the contrast medium. Feeding can usually be started six hours after the operation. At first solutions of tea and sugar are given, then skimmed breast milk. Permanent success can usually be expected in children who survive more than a week after the operation.

Treatment of Chronic Osteomyelitis.—At the same meeting, Dr. Felsenreich said that the most important problem in the treatment of patients with chronic osteomyelitis is the obliteration of the infectious cavity. All measures not directed toward this goal involve the danger of reinfection, with all its sequels, such as erysipelas, serious injuries of the parenchymatous and mesenchymatous organs, and renal lithiasis. The speaker said that the removal of 13 cavities by guttering and insertion of flaps of skin and fat resulted in 10 cures, and obliteration of 34 cavities by insertion of pedicled living muscle flaps resulted in 28 cures. If the patients in whom there were several adjoining foci were not counted as relapses, the number of permanently obliterated cavities was increased by 10%. In a detailed review of the literature, emphasis was placed on the recently described method of obliteration of the cavities by spongiosa transplantation under antibiotic protection. In a series of patients on whom reports were collected from the literature, cures were obtained in 85%. Sulfonamides and antibiotics are effective in sterilizing chronic suppurating cavities only when combined with obliterating plastic interventions. They should not be used in the absence of surgical measures, because, if this is done, there is danger of the development of resistant micro-organisms and of idiosyncrasy on the part of the patient.

Exchange Blood Transfusions.—At the meeting of the Austrian Society of Gynecology and Obstetrics held in November, Dr. H. Kölbl stated that exchange blood transfusions: (1) remove from the newborn infant a living or dead noxa together with the tissue serving as its vehicle; (2) substitute a healthy organ for a diseased inadequate one; and (3) elicit immunobiological processes—in the nature of a macroimmunization—that may have a positive or negative effect, depending on the reactivity of the organism. Failure to consider the changes in the morphological forms, and in the protein, bilirubin, and electrolyte exchanges during exchange transfusions, may give rise to deleterious conditions, just as does the use of incompatible blood. Early treatment, that is, performing exchange transfusion during the first two days of life, reduced the total mortality from hemolytic disease of the newborn infant, which formerly ranged between 70 and 80%, to 5.4%. Follow-up examinations revealed normal physical and mental development of the children who had recovered from erythroblastosis.

ENGLAND

Radiological Screening in the Light.—An x-ray screen intensifier capable of intensifying the brightness of the fluorescent screen so that it is visible in subdued daylight without previous dark adaptation as at present has been produced by Marconi Instruments Ltd. After passing through the patient, the x-rays impinge on a thin metal screen, which has the property of emitting electrons when activated by x-rays. These electrons are accelerated by means of a high potential difference (24 kv.) and focused on to a small fluorescent screen at the end of the apparatus by passage through electrostatic fields, "electron lenses." This screen resembles an ordinary x-ray viewing screen and emits visible light when bombarded by electrons. The image, which is somewhat less than a square inch in size, is then magnified, reflected out through a window, and viewed in an adjustable mirror. Actually the field of view is only 5 in. (12.7 cm.), but the detail is excellent and claimed to be better than that on an ordinary screen.

The greatly increased brightness of the image permits the use of a much reduced current, so that screening can be done with 1 ma. or less instead of the usual 3 or 4 ma. It also permits screening in subdued daylight without previous dark adaptation and the taking of motion-picture films at the standard rate (24 per second) without the danger of radiation hazards to the patient. Use of a special mirror that reflects into the camera only light wave lengths to which the film is sensitive permits screening of the patient while the film is running. It is not claimed that this apparatus presents any advantages for routine screening over that normally used, but it should be of particular value in

The items in these letters are contributed by regular correspondents in the various foreign countries.

cases in which the operator is using a special technique such as cardiac catheterization, retrograde pyelography, or cholangiography and needs to watch the patient as well as watch the screen. The image is not large enough to visualize the whole of the heart, but it suffices for selective cardioangiography. A larger screen would involve the use of bulkier apparatus and a larger tube, and there are limits to the performance of an electron lens.

Caisson Disease.—Drs. W. Paton and D. Walder have reported on caisson disease in men working on the construction of a tunnel beneath the river Tyne between 1948 and 1950 (Compressed Air Illness, Special Report Series, No. 281, London, Medical Research Council, 1954). Only patients with caisson disease causing loss of working capacity are reported to the Chief Inspector of Factories. Many of the cases are not considered severe enough to be reported, but they nevertheless cause a certain amount of suffering among underwater workers. Of 40,000 exposures to compression, complaints were made in 350 cases, or 0.9%. The authors found that new workers in this occupation showed a high incidence of the bends. At first this was 20%, but it was reduced to negligible figures after months of working in compressed air chambers. This decline was attributed to acclimatization and the elimination of hypersusceptible workers. Men over 50 years of age were found to be more susceptible than younger men. The authors believe that the high rate of caisson disease in new workers could be reduced by preliminary training. Decompression after working under water is often not carried out according to the regulations, with the result that workers suffer from the bends more than they need do. Three severe cases of caisson disease occurred during the two years' work on the Tyne tunnel. Two of the workmen became paraplegic and incontinent, with little recovery a year later. Both had neglected to obey instructions given for gradual decompression. The authors point out that working under water is a dangerous occupation and needs careful supervision.

Insulin Coma and Fetal Defects.—Dr. Ian G. Wickes states that insulin coma induced in a pregnant schizophrenic woman might be responsible for congenital deformities in the infant born subsequently (*Brit. M. J.* **2**:1029, 1954). A woman with schizophrenia was given a course of deep insulin coma therapy with 35 comas and one general convulsion. It was not known that the patient was two months pregnant at the time. The delivery was normal, but the child was blind in the left eye and at 3 years of age was unable to feed itself, talk, or stand, and was doubly incontinent. The mother had seven normal siblings. The child had severe mental deficiency, with wide separation of the orbits and asymmetrical development of the skull; it had a divergent squint and bilateral optic atrophy. A search of the literature showed that of six women who had had insulin coma treatment in pregnancy, in four treatment was given at or before the 10th week of pregnancy. Three of the fetuses aborted or were born macerated; only one was normal. Wickes believes that the 10th week of pregnancy may be critical. If insulin coma is given at or before this time he thinks that fetal abnormalities may be expected.

The evidence is suggestive but not conclusive, and defective germ plasma could have been present from the beginning in the cases described. Electric shock therapy is said not to harm the developing fetus. Anoxia might be a cause of fetal abnormality in the insulin coma, because it is more prolonged than in other forms of convulsive treatment.

Extreme Case of Insulin Resistance.—Dr. Douglas Hubble, of the Derbyshire Hospital for Sick Children, records an extreme case of insulin resistance in a 13-year-old girl (*Brit. M. J.* **2**:1022, 1954). From 24 units of soluble insulin twice daily at the beginning of treatment, the insulin was progressively increased until about two years later the patient was receiving as much as 19,200 units daily on some occasions. The insulin resistance was phasic, and when menstruation was established it was seen that the resistant phases were usually premenstrual and the insulin sensitive phases were postmenstrual. There was, however, no correlation between the variations in estrogen, pregnanediol, or 17-ketosteroid output and insulin needs. It was considered that the growth hormone was associated with these excessive insulin requirements. The girl was 4 in. (10 cm.) above average height at the beginning of treatment, and in the year of insulin resistance she grew nearly 2 in. (5 cm.) more than the average for her age. The volumes of insulin used were so large that the patient had to be hospitalized and the insulin given intravenously. The patient died in ketosis and renal failure just over two years after beginning treatment. Autopsy showed characteristic tubular changes in the kidneys, but no structural disease in the endocrine system was discovered.

New British Insulin.—Clinical trials with a new British insulin are described (*Lancet* **2**:782, 1954) by Professor Tunbridge and his co-workers at the department of medicine, University of Leeds. This is a complex of insulin, with a polypeptide derived from the aminoacid, lysine, which like protamine and globin delays absorption. Protamine zinc insulin was used as a control. Blood was collected by pricking a patient's finger five times a day, for the estimation of blood sugar and urinary sugar levels were conducted by Benedict's method. The patients were confined to the ward, and meal times were the same for all patients. The caloric intake was kept constant. The polylysine insulin had a more rapid action than protamine zinc insulin, but otherwise the difference between the two insulins was slight. When polylysine and protamine zinc insulin were administered with soluble insulin, the former gave better and more consistent control in the first half of the day, but the blood sugar level in the evening was higher than with the protamine zinc insulin and soluble insulin mixture.

National Health Service Criticized.—In an address at Sheffield University in October, Sir Lionel Whitby, professor of medicine and vice-chancellor of Cambridge University, said that it was essential that the iron grip of the Treasury should be relaxed on details of expenditure in the Health Service, particularly in the hospitals. For centuries hospitals had been administered efficiently, unobtrusively, and honestly by governing bodies composed of busy yet public-spirited persons. No one had questioned their wisdom or integrity in expending the vast sums of money that were voluntarily subscribed to the hospitals before the National Health Service took them over. Sir Lionel asked whether they or their successors could not be entrusted with block sums of money from the National Health Service, through the Treasury, without having to account for every detail and whether the practice and the expansion of medicine could not be handed back to those that understood it and who knew local conditions, giving them a free hand to use such money in the way they thought best. Such a principle had been conceded to the Medical Research Council, and if it were applied to the hospitals the progress of medicine would continue to be rapid.

Multiple Sclerosis.—A survey on multiple sclerosis in Northern Ireland has been carried out by Drs. Allison and Millar (*Ulster M. J.* [Supp. 2] **23**:5, 1954). During the period from 1948 to 1951, 700 cases in a population of nearly 400,000 were recorded. Every patient was personally examined by the authors, who, on the basis of history and clinical findings, classified them as follows: early 79, probable 476, and possible 145. Excluding persons under 20 years of age, the prevalence rate worked out to 79 per 100,000 population. The disease is most prevalent in the age group 30 to 39. There was no evidence to suggest that in Northern Ireland multiple sclerosis is commoner in the rural than the urban population. The familial incidence of the disease was confirmed; the incidence in siblings of patients with the disease was found to be 10 times what it was in a control group taken from the same area. The authors believe that the disease is not due to infection or environmental conditions but to a genetically determined predisposition.

Linear Accelerator for St. Bartholomew's Hospital.—A 15 million volt linear accelerator has just been made in the laboratories of Mullard Ltd. for St. Bartholomew's Hospital, London. It is claimed to be the most powerful machine of its kind in the world to be used for medical purposes only. A powerful source of penetrating x-rays for supervoltage radiotherapy, particularly suitable for the treatment of deep-seated growths, results from the great intensity of the electron beam coupled with the high energy imparted to it by the accelerator. At first the accelerator will be used for research purposes only. The program will include investigations on the therapeutic uses of fast electrons and of neutrons that are generated by the x-rays, calculation of the

energy dissipation of radiation in living tissues, and studies on the fundamental action of radiation on living tissue. For the latter, use will be made of the pulsed character of the electron beam, by which high doses of radiation can be produced in about a microsecond.

Waiting for Hospital Beds.—The Minister of Health has asked hospital authorities throughout England to ensure the most effective use of hospital beds. He emphasizes that although the annual number of inpatients has increased by a sixth since the inception of the National Health Service, the waiting list for hospital beds is about 500,000, and that a reduction in this waiting list is a matter of immediate urgency. The Minister referred to the cost and staffing difficulties in making a large increase in the number of beds. But he said that much could be done to increase the turnover of beds in the hospitals. While it is generally agreed that 80 to 85% of beds occupied is the maximum in a general hospital, the Minister said that many hospitals had increased this to over 90%. While various measures to increase the bed turnover had been suggested, he said he did not want patients passed through the hospitals as "through a factory conveyor-belt principle."

FRANCE

Congenital Tuberculosis.—At a meeting of the Medical Society of Paris Hospitals, Rossier and Roussel reported authenticated congenital tuberculosis occurring in two premature infants. One infant, born after 29 weeks of gestation, had crepitant rales at the base of the lungs and died of asphyxia in spite of treatment. Autopsy revealed caseous tuberculosis of the lungs, proved bacteriologically. Tuberculous lesions were found in the mother's endometrium. The mother later suffered from a tuberculous meningitis but survived. The second infant, born after 26 weeks of gestation, with a birth weight of 1,100 gm., had pulmonary tuberculosis. He was given 50 mg. of streptomycin and 20 mg. of isoniazid per kilogram of body weight and is the only premature infant with tuberculosis known to have survived.

Phenylbutazone in Toxicosis of the Newborn Infant.—At a meeting of the Medical Society of Paris Hospitals, Bouvet referred to the experiments of Ravina and his co-workers who have studied the antipyretic properties of phenylbutazone in tuberculosis. As the hyperthermia of the neurotoxicosis in the newborn infant is of central origin, it occurred to Bouvet to try the drug on some patients with this condition. After the failure of the more commonly used remedies, he injected 20 mg. of phenylbutazone per kilogram of body weight in one dose and obtained dramatic results. This dose was arrived at after many conservative trials because of the necessity to avoid a dangerous hypothermia. With this dose no untoward reactions have occurred.

GREECE

Dangers of Transfusion.—In the *Helliniki Iatriki of Thessaloniki*, June, 1954, M. Paidousis and N. Constantoulis report the case of an unmarried woman, aged 22, whose blood was believed to be group B, Rh positive. She complained of severe and repeated hemorrhage due to varicose veins of the esophagus and was given 24 transfusions of groups B and O, Rh-positive blood between September, 1951, and April, 1953. All donor samples were cross matched with the patient's blood, and no incompatibility was detected, but the patient had a severe hemolytic reaction at the conclusion of or during the last three transfusions, followed by rigor, pyrexia, hemoglobinuria, and oliguria, and in one instance the transfusion had to be discontinued. Laboratory investigation showed that the patient's blood was group O, Rh positive (CDe/CDe) and that the transfused Rh-positive cells, when c-positive, underwent hemolysis. Immune antibody, type anti-c, was found in the patient's serum to a titer of 1:160 with homozygous c-positive erythrocytes suspended in albumin, while the titer against heterozygous cells was 1:20.

From June to September, 1953, the patient received 14 additional blood transfusions, including 7 in one day, when a splenectomy and splenic renal anastomosis was performed. The blood samples for these further transfusions were carefully selected by establishing the Rh genotype. The direct matching was performed with the use of cells in bovine albumin, incubated at 37 C for one hour, centrifuged, and read microscopically. All these transfusions were well accepted. The patient belonged to the category of "endangered recipients," and being Rh positive she ran the risk of almost losing her life through the development of an immune antibody of the type anti-c. In the case of a patient about to receive a transfusion who has a history of unfavorable reaction to previous transfusion or who has borne a jaundiced or stillborn child, a more elaborate direct matching should be applied with the antiglobulin technique as well as the albumin procedure.

PERU

Needle Biopsy of the Liver.—Dr. Carlos Merino Ugarte, of the Worker's Hospital in Lima, has reported (*Rev. méd. Hosp. Obrero* 3:39, 1954) 69 needle biopsies of the liver in 62 patients, most of whom showed either symptoms or alterations of the liver function tests that suggested hepatic damage. The short and the long types of Vim-Silverman needles were used. In most cases the liver was reached by the transthoracic route, but in those patients with marked hepatomegaly the abdominal route was preferred. As an anesthetic, 8 cc. of a 1% solution of procaine was injected, infiltrating the skin, deep tissues, and Glisson's capsule. All patients were given an intramuscular injection of 10 mg. of vitamin K daily for three to five days before the biopsy, and this was performed only when the prothrombin time was within normal limits. In no case was soothing treatment used. When the procedure caused much pain, 100 mg. of meperidine or 30 mg. of codeine was injected subcutaneously. Before the biopsy was performed a brief psychotherapeutic treatment was given, in order to gain the trust of the patient and relieve his anxiety.

By means of clinical study and careful evaluation of the hepatic function the following diagnoses were made in this series: infectious hepatitis in 23 patients, hepatic cirrhosis in 19, obstructive jaundice in 4, primary cancer in 4, and metastatic cancer in another 4. In the remainder it was not possible to reach a diagnosis. Needle biopsy verified the infectious hepatitis in 20 patients; specimens were worthless in 2 cases, and in the final patient a fatty liver with stasis of the biliary tree was found. In the patients with probable cirrhosis of the liver, the biopsy confirmed the diagnosis in 13, in one the specimen was insufficient, and in the remainder the biopsy findings were as follows: fatty liver in 2, hepatic microabscess and nonspecific granuloma in one, hepatic fibrosis in one, and in one the liver was normal. In the four patients with probable metastatic cancer, needle biopsy proved the diagnosis in only one; in the others the liver was normal. In the four patients with probable primary cancer, the biopsy verified the diagnosis in all. In the four patients with probable obstructive jaundice the histological study revealed biliary stasis in two, cholangitis with biliary stasis in one, and portal cirrhosis in one.

It was concluded that: 1. Needle biopsy of the liver is a diagnostic procedure of great value. 2. The hazards of hepatic puncture may be greatly reduced by adequate preparation of the patient and by a good technique. 3. Needle biopsy is a procedure available to the general practitioner and may be used in all patients with hepatic diseases. 4. Needle biopsy is more useful in conditions with diffuse lesions rather than in those with localized lesions. 5. The likelihood of obtaining a good biopsy specimen improves with the experience of the physician. 6. To minimize failures in getting a good specimen two punctures should be made on the same occasion. 7. The transthoracic approach improves the chances of getting a good biopsy specimen in most cases, regardless of the presence of liver enlargement. 8. For transthoracic puncture the long Vim-Silverman needle, and for transabdominal puncture the short needle, is preferred. 9. Any disturbance in the coagulation is an absolute contraindication for the procedure. 10. Needle biopsy permits control of the treatment.

Symposium on Peptic Ulcer.—At the second Annual Meeting of the Peruvian Society of Gastroenterology held in Lima in November, Dr. Luis Gurmendi of the San Marcos University School of Medicine reported on a series of 70 patients with perforating peptic ulcer. At the moment of perforation 56 of them complained of severe epigastric pain; 52 had symptoms typical of peptic ulcer; 36 had a cold sweat, especially of the head; 35 had nausea; 27 had vomiting; and 22 had meteorism. Later, 14 had diarrhea, 14 had hematemesis and melena, 13 had slight transient amelioration of symptoms, 8 had constipation, 7 had sour eructations, and 3 had headache and vertigo. Only 11 fainted. Thirteen complained only of a mild epigastric pain, leading in most cases to a wrong diagnosis. On physical examination, 49 had rigidity of the abdominal wall, 35 had cutaneous hyperesthesia, 35 had tachycardia and hypertension, 33 were pale, 20 had shallow breathing, 7 had muscular rigidity, and 3 had fever. The general practitioner should be aware of certain atypical manifestations that may suggest perforation of a peptic ulcer, such as a lack of severe pain, a spontaneous transient improvement, a soft abdominal wall, and an absence of a history of a peptic ulcer; by using pneumoperitoneum the author made a correct diagnosis in 90% of the cases.

No relation between the physical activity and the moment of the perforation was observed. In 39 of these patients the perforation occurred within three hours after eating; in 22 it occurred three to six hours after eating and in 9 after six hours. In 45 the perforation was located in the pyloric antrum; in 20 it was in the duodenum, and in 5 it was in the pylorus. Fourteen patients were operated on within five hours after the onset of the perforation, 33 within the 5th and 17th hour, and 23 between the 17th and 129th hour. Although good results were obtained in most patients when the operation was performed within the first 17 hours, the author advises surgical intervention within 6 hours of the perforation. Forty-two patients underwent a simple suture with Graham's omentumplasty; six patients died. Twenty-eight had a subtotal gastrectomy by means of Polya's technique, and two died. Postoperative drainage was not used in any patients in this series. The presence of fever had no apparent relation to the operative results.

Dr. Jorge de la Flor, of the National Institute of Neoplastic Diseases, discussed the differentiation between benign and malignant peptic ulcer. In a series of 1,150 gastrointestinal roentgenographic studies, 55 benign and 11 presumably malignant ulcers were diagnosed; 20 of the benign ulcers were operated on, and the biopsy proved the diagnosis to be correct in all of them; 8 of the presumably malignant ulcers were removed, and the histological study revealed malignant disease in 6. To obtain a correct diagnosis in benign or malignant ulcer, the radiological study must be regarded not as decisive but as an important aid to clinical evaluation.

New Treatment for Cysticercosis.—Drs. Rocca, Trelles, and Ravens of the San Marcos University School of Medicine have stated (*Rev. méd. Hosp. Obrero* **3**:141, 1954) that cysticercosis of the central nervous system produces a cerebral hypertensive syndrome that progresses to dementia and death. In the hope of improving the prognosis in this disease, the authors developed a two-stage operation. In the first stage an occipital craniotomy and laminectomy of the first three cervical vertebras is performed; then the epidural space and posterior cranial fossa is thoroughly explored and the cysticerci removed. Ten or 15 days later a frontal craniotomy is performed in order to explore the frontal cisternas and open up the third ventricle so that the remaining cysticerci can be removed. The patients must undergo both operations in the sitting position and under general anesthesia induced by means of artificial hibernation. This operation is suitable only for treatment of the racemose type of the disease and should be followed by a short course of therapy with cortisone or corticotropin (ACTH). The authors obtained a good result in a patient who underwent the two operations. Neither amelioration nor remission of the disease was observed in three other patients who only had the first operation.

Dr. Fuller Albright Honored.—On Dec. 2, at a special session of the faculty of the school of medicine, Dean Oswaldo Hercelles G. made Dr. Fuller Albright of the Harvard University School of Medicine an honorary professor to the San Marcos University of Lima for outstanding work in endocrinology.

TURKEY

Nutritional Megaloblastic Anemia.—In *Dirim* (vol. 15, no. 9) Frank and Ulutin described a 30-year-old woman with nutritional megaloblastic anemia. For two years she had tired easily and there was intermittent redness and pain of the tongue. Ten months prior to admission and during the last month of pregnancy there were small, painless, watery, frothy stools three times a day. They ceased after delivery, but weakness and pallor increased; she could not walk unassisted, and for 10 days prior to admission she had passed large watery stools three times a day. For many years her diet had been devoid of iron, vitamin A, and such protein-rich foods as meat, milk, cheese, or eggs. On admission she was pale and emaciated and had a dry skin devoid of adipose tissue but no enlarged lymph nodes. She had cracked lips, a coated tongue, and a sunken abdomen, but her spleen and liver were not palpable. Her area of cardiac dulness was enlarged, and she had a mild pericardial fremitus. On auscultation there was a generalized systolic murmur. She had a regular pulse of 120 beats per minute and a blood pressure of 100/80 mm. Hg. She had had malaria and had four living children.

Her erythrocyte count was 420,000 per cubic millimeter; her hemoglobin level was 20% and her leukocyte count 3,200 per cubic millimeter, with 68% neutrophils, 27% lymphocytes, 3% monocytes, 1% transitional cells, and 1% eosinophils. Her platelet count was 26,800 per cubic millimeter, and she had 6% reticuloendothelial cells and a hematocrit of 7.5%. The erythrocytes were all large oval megalocytes; anisocytes and poikilocytes were few. The sternal puncture cell count was 38,000 per cubic millimeter. The total protein level was 5.7 gm. per 100 cc. (albumin 2.6 and globulin 3.1 gm. per 100 cc.). The formaldehyde (formol)-gel test was negative. The serum diastase value (Wholgemuth) was 64 units. The bilateral spread of the Price-Jones curve was 9 to 10 μ. Radiographic examination of the heart showed global extension (cor anemicum). Examination of the gastric secretion revealed the presence of histamine and free acid. The patient was given 385 cc. of blood by transfusion, liver extract, a vitamin B_{12} preparation, and an adequate diet. Within 36 days her erythrocyte count rose to 2,050,000 per cubic millimeter, the hemoglobin level to 34%. The patient was given an iron adjunct, and within 32 days the erythrocyte count rose to 3,500,000 per cubic millimeter and the hemoglobin to 64%. The liver and iron therapy was discontinued for two weeks, and the patient was given a daily dose of 25 mg. of folic acid. This elicited a 4% reticulocyte crisis and increased the erythrocyte count. The therapy was stopped for 10 days and was followed by a daily dose of folic acid. Within 18 days the erythrocyte count rose to 4,620,000 per cubic millimeter and the hemoglobin level to 80%. The patient gained 20 kg. in four months at the hospital (weight on admission: 38 kg.).

Postvaccinal Encephalopathy.—Smallpox has in recent years almost come under control in Turkey. As soon as smallpox occurs in Iran, Iraq, or Syria, where smallpox is sporadic, the population in the Turkish border provinces is immediately revaccinated. Every year 2 to 3 million persons are vaccinated. The law requires the vaccination of all babies in the first four months of life, a second vaccination on entering school, and revaccination on entering military or civil service and when applying for a marriage certificate or a passport. All smallpox vaccine is prepared at the Ankara Refik Saydam Central Institute of Hygiene. Vaccination is free. In *Saglik Dergisi* (vol. 28, no. 3) Tiner and Dürüshken reported a case of encephalopathy after smallpox vaccination. Seven days prior to admission to the hospital a 5-year-old boy had been vaccinated for the first time. At first the reaction was normal, but it soon became extreme. There was fever for a few days; then difficulty in walking appeared. There was no headache, vomiting or disturbance of vision. On examination there was bilateral minor asynergia, hypermetria, adiadochokinesia, positive bilateral Stewart-Holmes reactions, appendicular major asynergia, and intention tremor of head and hands. Fundoscopic examination showed mildly edematous retinas. The spinal fluid was normal. The patient was given vitamins E and B_1. Within 30 days after lumbar puncture he was able to walk unassisted.

GOVERNMENT SERVICES

AIR FORCE

Six Hundred Thirty-Two Miles Per Hour Exposure to Windblast.—An Air Force officer has gone from a speed of 632 miles per hour to a dead stop in less than one and a half seconds in performance of a test for the Air Research and Development Command. Lieut. Col. John P. Stapp, chief of the Aero-Medical Field Laboratory at Holloman Air Development Center, N. Mex., reached that speed while riding a rocket-propelled sled to reproduce exposure to windblast and slowdown effects experienced by aircrewmen when escaping from aircraft at supersonic speeds.

The test vehicle was a 2,000 lb. sled mounted on rails and pushed by nine rockets that exerted a total force of 40,000 lb. thrust. The enormous force generated by the rockets accelerated the sled from a standing start to its top speed of 632 miles per hour in five seconds time and 2,800 ft. distance. After the rockets burned out the sled coasted for less than a half second, and the actual braking to a stop took a fraction more than a second. During the test the subject, Colonel Stapp, withstood a deceleration of 35 times gravity and a wind pressure of more than two tons. With the exception of a plastic helmet and a clear plastic visor to protect his face, no special clothing was worn for the test. The sled was stripped even of a windshield for the test. The subject was strapped to his seat with a special nylon web harness made of individual strips of nylon comprising shoulder and leg straps, chest and lap belt, and tie-down straps.

At the 4,100 ft. altitude of Holloman Air Development Center, the wind force against Colonel Stapp's body when he reached the speed of 632 miles per hour was equivalent to that of almost 1.7 times the speed of sound (more than 1,000 miles per hour) at 35,000 ft., the normal cruising altitude of jet aircraft. Although he did not suffer any ill-effect from the test, Colonel Stapp received a small blood blister from dust particles in the air and two black eyes as a result of his eyes being thrown forward against his eyelids during the rapid deceleration period. As quickly as he had been carefully examined at the Holloman Hospital after the run, he ate lunch and set about analyzing the data gained from the run.

Air Force Officer Named to Editorship.—Brigadier Gen. Otis O. Benson Jr., U. S. A. F., president of the Aero Medical Association, has announced that Col. Robert J. Benford will take over the editorship of that organization's publication, the *Journal of Aviation Medicine*. He will succeed Dr. Louis H. Bauer, of New York, first commandant of the U. S. Air Force School of Aviation Medicine and founder of the Aero Medical Association. Colonel Benford was on the staff of the Omaha *World Herald* before he attended the University of Nebraska College of Medicine. During World War II, he was air surgeon of the 20th Bomber Command, the first B-29 organization to attack the Japanese mainland. Later as commander of the American Air Force Aero Medical Center in Heidelberg, Germany, he was responsible for collecting scientific and historical information concerning wartime achievement of *Luftwaffe* flight surgeons. He was appointed the first Air Force editor of the *Armed Forces Medical Journal* on July 1, 1953, and currently holds that position.

VETERANS ADMINISTRATION

Period of Eligibility for Certain Veterans Benefits Ends Jan. 31.—Following is an abstract of a VA statement released Jan. 3:

The President has issued a proclamation setting Jan. 31, 1955, as the end of the period of eligibility for certain veterans' benefits of the Korean conflict administered by Veterans Administration and other federal agencies. The VA-administered benefits affected by the proclamation are education, training, and loans under the Korean GI Bill; vocational rehabilitation for the disabled, compensation and pension for living veterans and for dependents of deceased veterans; medical, hospital, and domiciliary, and burial benefits; automobiles for the seriously disabled; and benefits for certain inductees.

The effect of the proclamation on some of these VA benefits follows:

Education and Training Under the Korean GI Bill.—The proclamation sets Jan. 31, 1955, as the last day of the Korean conflict period during which those in service may earn entitlement to education or training. The Korean conflict period began June 27, 1950. Those entering service after Jan. 31, 1955, will not be entitled to education or training under the Korean GI Bill when they leave service. As a result of the proclamation, the end of the Korean GI Bill education and training program for eligible veterans will be Jan. 31, 1963, or eight years after discharge or release from active service, whichever is earlier. Eligible veterans may not receive further training beyond those dates.

Home, Farm, or Business Loans Under the Korea GI Bill.—The proclamation establishes Jan. 31, 1955, as the last day of the Korean conflict period when the necessary period of service may begin for entitlement to guaranteed, insured, or direct GI loans. The effect of the proclamation sets Jan. 31, 1965, as the end of the GI loan program for eligible Korean conflict veterans. Thus, the guaranty or insurance of GI loans will not be available on loans made to veterans after that date.

Vocational Rehabilitation for the Disabled.—The proclamation establishes Jan. 31, 1955, as the last day of the Korean conflict period during which those in service may become eligible for vocational rehabilitation. As a result of the proclamation, the end of the vocational rehabilitation program for eligible veterans will be Jan. 31, 1964, or nine years after discharge or release from active service, whichever is earlier. No training may be provided beyond those dates except for certain persons with hardship cases who, under the law, are granted an additional four years in which to train.

Compensation or Pensions.—The proclamation sets Jan. 31, 1955, as the last day of the Korean conflict period during which those in service may acquire entitlement to compensation for service-connected disabilities on the same basis as World War II veterans. Those who suffer disabilities in service after Jan. 31, 1955 must be paid compensation at peacetime rates, which are 80% of the wartime rates. However, if the disabilities are incurred after that date as a result of extra hazardous service, the wartime rates are payable. Jan. 31, 1955 also is the last day of the Korean conflict period during which those in service may become entitled to wartime veterans' pension for non-service-connected disabilities of a total and permanent nature. Persons entering service after Jan. 31, 1955, will not be eligible for such pension when they leave service.

For death from service-connected disabilities incurred after Jan. 31, 1955, compensation may be payable to otherwise eligible widows, children, and dependent parents of the deceased veterans at peacetime rates, which are 80% of the wartime death compensation rates. However, should these disabilities be incurred under extra hazardous conditions after Jan. 31, 1955, the wartime rates would be payable. Dependents of deceased veterans who entered service after Jan. 31, 1955 will not be entitled to pension for non-service-connected death.

Medical, Hospital, and Domiciliary Benefits.—The proclamation sets Jan. 31, 1955, as the last day of the Korean conflict period during which those in active service may establish entitlement, after discharge, to VA hospitalization or domiciliary care for non-service-connected disabilities on the same basis as wartime veterans. Those entering service after Jan. 31, 1955, will be entitled to VA hospitalization or domiciliary care only if they are discharged for disabilities incurred in service in line of duty or if they are receiving VA compensation for service-connected disabilities. In addition, to be entitled to domiciliary care, they must be incapacitated from earning a living and have no adequate means of support. Those entering service after Jan. 31, 1955, may establish eligibility for outpatient medical and dental care if they are discharged for disabilities incurred in line of duty or if they are receiving VA compensation for service-connected disabilities, provided they meet all other specified eligibility requirements.

CORRESPONDENCE

TREATMENT FOR SYPHILIS

To the Editor:—In the Oct. 30, 1954, issue of THE JOURNAL, page 894, appears an editorial entitled "Treatment of Syphilis." In most respects it is an excellent editorial, and it should help to ensconce the heavy metals securely in the archives to which they should have retired at least six years ago. One point in the editorial, however, is disturbing. The time is long since past when the sword of uncertainty need be held over the patient's head "for at least 30 years." The statement, "Whether the treatment of early syphilis prevents the late manifestations and in pregnant women prevents the transmission of syphilis to the fetus cannot be determined until penicillin has been used in the treatment of this disease for at least 30 years," is almost mystic in its sweep. Who has seen a patient with early syphilis, under treatment, achieve and maintain seronegativity in the blood and spinal fluid for a year or more, only to have late manifestations of syphilis develop at a subsequent date without evidence of possible, nay, probable, reinfection? Who has seen the issue of penicillin-treated (or arsenic-treated) pregnancy enter this world with a negative reaction from blood and spinal fluid and maintain it for a year or longer, only to show at a subsequent date the late manifestations of congenital syphilis?

Several investigators have treated large series of patients with early syphilis with penicillin and followed them closely. They have failed to discover any indications that patients with early syphilis who are treated with penicillin and subsequently achieve seronegativity, which is maintained a year or longer, spontaneously revert to seropositivity and show development of the late manifestations of the disease. Some of these studies are now over 10 years old. The physician who injects the proper dose of penicillin in his syphilitic patient should do it with a confidence that is transmitted to the patient. He has every right to assure him at the end of a year of seronegativity that the patient is done with syphilis unless he contracts the disease again. In the light of the facts at hand, to let the patient go on indefinitely wondering when the lightning will strike is cruel both to the patient and to the physician.

ROBERT D. WRIGHT, M.D.
University of Virginia
School of Medicine
Charlottesville, Va.

A CLASSIFICATION OF BRONCHIAL ASTHMA

To the Editor:—The statement "All that wheezes is asthma" has evoked a great deal of controversy for many years. It was Laennec, in 1819, who identified asthma as a specific disease characterized by paroxysmal dyspnea without demonstrable associated organic lesions. He reasoned that the cause of asthma must be spasm of the muscles of the bronchi and believed asthma to be primarily a neurosis. Subsequently other physicians, among them Romberg, Hyde Salter, and Trousseau, concurred in the belief that asthma has a nervous etiology. Thus the term "idiopathic asthma" came into usage. Since 1910, however, when Auer and Lewis demonstrated bronchospasm as a constant finding in the lungs of guinea pigs dead from anaphylactic shock and Meltzger suggested that asthma might be an anaphylactic disease, the allergic or immunologic theory has been generally accepted. Asthma was then suggested to be an atopic illness that manifested itself in recurrent attacks of paroxysmal dyspnea, particularly pronounced in the expiratory phase, accompanied by wheezing and coughing. It was recognized as a hypersensitivity reaction to various substances in which spasm of the smaller bronchi and bronchioles, edema, and secretion, usually a reversible process, were noted.

However, during the past decade there has been a growing awareness that causes other than allergy may initiate or express themselves in asthma. Schick and Peshkin (Brenneman's Practice of Pediatrics, edited by I. McQuarrie, Hagerstown, Md., W. F. Prior Company, Inc., 1948, vol. 2, chap. 57, p. 34), Swineford (*J. Allergy* **25**:151 [March] 1954), and others, within recent years, have suggested total classifications that are attempts to clarify the roles of both hypersensitive and nonhypersensitive causative factors in asthma. Swineford lists as possible etiological factors atopy on the one hand and on the other, the nonimmunologic factors of infection; chronic pulmonary disease; bronchial obstruction; and psychogenic, metabolic, physical, cardiac, and idiopathic causes. Statistics are presently unavailable on the relative incidence of the various causes of asthma. It seems, however, that atopy and infection are usually the most significant primary factors. Many, or any, of these immunologic or nonimmunologic factors may coexist and interact in the same patient. Some authorities (Baldwin, H. S., in Cooke, R. A., and others: Allergy in Theory and Practice, Philadelphia, W. B. Saunders Company, 1947, chap. 8, p. 166. Peshkin, M. M., in Somatic and Psychiatric Treatment of Asthma, edited by H. A. Abramson, Baltimore, Williams & Wilkins Company, 1951, chap. 19) feel that patients who manifest asthma on a nonatopic basis are "asthmogenic" or potentially asthmatic on a hypersensitive basis. They further believe that the stress and strain on the respiratory mechanism has reflected itself in asthmatic symptoms only in "predisposed individuals," that is, those persons in whom certain factors that are necessary for asthma to develop preexist.

Salter, in 1860, wrote that asthma is one and indivisible—that there is but one species of asthma; and so far as its essential pathology goes, asthma is one in its morbid anatomy, one in its characteristic phenomena. Accepting this old yet new concept from the viewpoint of our present-day thinking, a more encompassing definition of asthma is dyspnea with wheezing most marked in the expiratory phase of respiration. To some physicians, the term wheezing includes any noisy sounds heard in the chest on auscultation. In some patients the passage of air through bronchial tubes narrowed by mucosal edema, inflammation, or spasmodic contraction and, usually, containing a thin, tenacious exudate gives rise to a multitude of squeaking and groaning sounds known as dry or musical rales. Sounds produced in the larger bronchial tubes are deep-toned and groaning; those in the smaller, finer tubes are piping, squeaking, and whistling. The former are the sonorous and the latter the sibilant rales. These sounds are heard most frequently in the expiratory phase of respiration. At times they are difficult to hear, but coughing or forcible expiration is helpful in eliciting them. Sibilant and sonorous rales are diagnostic of asthma. Occasionally, however, unusual sounds heard in the lungs include not only dry sibilant and sonorous rales but rhonchi and other moist rales. These may be audible and often coexist in the same case of asthma, with or without organic complications.

It is important to recognize that asthma is essentially part of a syndrome. Particularly in children, some of the earlier physical findings, which were initially not clearly identified as part of the asthma syndrome, may be readily observed. The asthma syndrome, according to Peshkin (Progress in Allergy, edited by P. Kallós, New York, Interscience Publishers, Inc., 1952, chap. 56), may be divided into three stages. 1. The oppression stage is a subjective complaint voiced by patients and consists of a feeling of tightness or heaviness in the chest and difficulty in breathing deeply. Examination of the lungs reveals them to be clear. No wheezing is audible. 2. The wheezing stage or preattack stage is often diagnosed wrongly as bronchitis or asthmatic bronchitis. The characteristic sibilant and sonorous rales are heard at this time. Dyspnea may or may not be present. 3. The attack stage epitomizes the summit of the asthmatic syndrome. Dyspnea is very troublesome during this stage of asthma. The musical rales are very pronounced. The wheezing may be audible at a distance. Frequently, the posture of the patient is characteristic. In some cases, despite adequate drug therapy, the attack stage may persist for longer than 48 to 72 hours, and this phase is termed status asthmaticus. Should asthma be relatively continuous and the intervals between attacks short in spite of competent allergic management, then such cases are designated as chronic or intractable asthma. Thus, essentially, status asth-

maticus and intractable asthma are distorted forms of the third stage of asthma—the former implying a relatively acute severe state and the latter, a chronic state present over a long period of time.

Increasing study of cases of asthma has clarified our thought concerning its etiology. We are now able to proceed from Jackson's restricting statement, "All is not asthma that wheezes," which unfortunately has been widely quoted in both allergic and other medical literature, to a more comprehensive view of asthma. His statement was a result of the prevailing theory at that time that all asthma must have an antigen-antibody foundation. The problem resolves itself, then, in the physician having a knowledge of the multiplicity of possible causes of asthma and an awareness of these in the evaluation of a case of asthma. Even after treatment has been commenced, a continuing search for all possible factors should be carried through and the amelioration of these factors should be integrated into the total plan of treatment.

HOWARD G. RAPAPORT, M.D.
50 Central Park West
New York 23.

EVALUATION OF PROTEIN HYDROLYSATE THERAPY IN TREATMENT OF MUSCULAR DYSTROPHY

To the Editor:—It has recently been claimed that oral therapy with large doses of a protein hydrolysate powder (an enzymatic digest of casein containing amino acids and their peptides) supplemented with large doses of cyanocobalamin (vitamin B_{12}) and folic acid has had a restorative effect on the muscles in patients with muscular dystrophy (Van Meter, J. R.: *California Med.* **79**:297, 1953; paper read before the sixth annual meeting of the American Academy of Neurology, Washington, D. C., May 1, 1954). Others have not been able to confirm these findings (Drew, A. L., and others: *Neurology* **4**:789, 1954).

We studied a group of six adult patients with slowly progressive muscular dystrophy of long duration and advanced degree, involving to a greater or lesser extent all four extremities. The diagnosis of muscular dystrophy was made in each case over the course of years by several observers on the basis of the typical clinical course of slowly progressive muscular wasting, loss of deep tendon reflexes, and preservation of sensation, plus pseudohypertrophy in two cases. Biopsy of muscles was done in all cases and showed dystrophy. These patients, all of whom were confined to wheelchairs, were given 15 gm. of the protein hydrolysate powder three times a day. After three months of this regimen alone, the medication was supplemented by folic acid, 5 mg. four times daily; vitamin B_{12}, 25 mg. four times daily; and two multivitamin tablets daily, each tablet containing the daily requirement of vitamins B and D and ascorbic acid of the average adult. The patients were examined before the beginning of treatment, after a two months' course of protein hydrolysate alone, and after a four and one-half months' course of protein hydrolysate and vitamin therapy. The following evaluations were made at these times: (1) subjective response of the patient, (2) limb circumference at fixed points where atrophy was apparent, (3) muscle function, and (4) weight. In addition, the 24 hour excretion of creatine and creatinine was determined at biweekly intervals throughout the experiment.

1. Two patients noted some feeling of increased strength, but this was a transitory sensation, disappearing after a few months. One patient also noted a general feeling of well-being for a few months. The other four patients noted no subjective response.

2. In no case was there a steady increase in limb circumference from beginning to end of therapy. In one case, after the first two months there was a 1 in. increase in circumference of both lower legs; subsequent measurements were the same, however, and the patient regained no function. In all other patients, changes in measurement were less than 1 in., and there were slight increases and slight decreases in the same patient—probably an error allowable for the gross measurement procedure.

3. The patients were too weak for dynamometry, but inspection of their gross ability to move hands and feet over the course of months revealed no change in strength, confirming the patients' own observations.

4. Throughout the six and one-half months of therapy there was no variation in weight in any of the patients of more than 5 lb. (2.3 kg.). None gained more than 2 lb. (0.9 kg.).

Mean determinations of several measurements of creatine and creatinine excretion are seen in the table. It is apparent that creatinuria persists and that excretion of creatinine, which is proportional to the amount of total body muscle mass, steadily decreases.

There was no indication from this small series of adult patients with advanced progressive muscular dystrophy that large amounts of protein hydrolysate and vitamin supplements have any effect on the course of the disease.

Creatine and Creatinine Excretion in Patients with Muscular Dystrophy

Case No.	Age, Yr.	Sex	Creatine, Gm. per 24 Hr.			Creatinine, Gm. per 24 Hr.		
			Before Therapy	Protein Hydrolysate *	Protein Hydrolysate Plus Vitamins †	Before Therapy	Protein Hydrolysate *	Protein Hydrolysate Plus Vitamins †
1	37	F	0.87	0.81	0.73	0.43	0.37	0.31
2	57	M	0.11	0.30	0.48	0.77	0.70	0.61
3	35	M	0.49	0.35	0.38	0.22	0.24	0.18
4	55	M	0.71	0.51	0.63	0.30	0.29	0.28
5	40	F	0.54	0.49	0.77	0.20	0.23	0.26
6	58	M	0.40	0.26	0.47	0.76	0.59	0.53

* Mean determination after 6 weeks of therapy with protein hydrolysate alone.
† Mean determination after 4½ months of therapy with protein hydrolysate, vitamin B_{12}, folic acid, and multivitamins.

DEWEY K. ZIEGLER, M.D.
THEODORE J. C. VON STORCH, M.D.
Montefiore Hospital
East Gun Hill Road, New York 67.

PSYCHOLOGY AND PSYCHIATRY

To the Editor:—In the perennial controversy between psychiatrists and nonmedical psychologists, I disagree with the extremists on both sides. Yet there have been so many distortions of my point of view by misquotations and by quotations out of context that correcting them may help to secure an open-minded hearing for the moderate and realistic solution that I have recently spelled out in detail (*Texas Rep. Biol. & Med.* **12**:692-737, 1954). To clarify my position, it will first be necessary to indicate my points of agreement and of disagreement with both sides. I agree with physicians when they insist that, at present, none of the nonmedical behavioral scientists receives the training that is an essential prerequisite for independent psychodiagnosis and psychotherapy. I disagree emphatically with those clinical psychologists who believe that their present training suffices. On the other hand, I must agree with the clinical psychologist when he points out that few internists or surgeons are as well trained for psychodiagnosis or psychotherapy as he is. Yet I cannot allow these deficiencies to justify the claim of the psychologist that he has a right to do something for which neither group is adequately prepared. Instead, I agree with those psychologists who contend that in the public interest they can be trained and should be provided with complete training for psychodiagnosis and psychotherapy.

My concurrence rests on three basic considerations. 1. I believe that behavioral scientists other than physicians can make significant contributions to psychiatry itself that the inescapable limitations of the medically trained psychiatrist prevent his making. 2. The community's need for the services of those who are thoroughly trained in psychodiagnostics, in preventive psychiatry, and in psychotherapy can never be fully met from the ranks of the medical profession alone. This has been proved so often that it is unnecessary to present statistical evidence here. 3. The inevitable consequence, however, is worth stressing, namely, that representatives of other disciplines will automatically fill the gap as best they can. Under such circumstances a law that made it illegal for nonmedical scientists, no matter how fully trained, to practice psychodiagnosis and psychotherapy would have an effect identical with that of the Prohibition Act: It would increase the prevalence of inferior, "bootleg" practice. All such proposals as the bill recently offered by Congressman Greenberg of New York would merely accelerate the development of "wilder" pseudopsychodiagnosticians and "wilder" pseudopsychotherapists. The official position of the American Psychiatric Association, insofar as it has any effect, will have a similar result, and the official stand of the American Psychoanalytic Association against the training of nonphysicians as psychoanalytic therapists will likewise merely increase the supply of "wild" analysts.

Exclusion is not the answer. Then what is?

All will agree that the ultimate solution to the problem of the neuroses is prevention. Today, however, and for a long time to come, the main preventive technique is early therapy; early in infancy, childhood, and adolescence, and again early in the critical turning years into old age. The fantastically rapid increase in the percentage of the total population that is aged under 17 and over 60 means that, if early treatment is to be provided, there must be a proportionate increase in the numbers of those equipped to give it. The problem is (1) where they are to come from; (2) how and by whom they should be trained; and (3) under what conditions they should practice. I cannot discuss these three issues fully, but my essential argument is that, instead of trying to exclude everybody else, the medical profession should play a major role in providing training. To be more specific, medical psychiatry and the medical schools and teaching hospitals should cooperate with other behavioral sciences in the development of a new profession, one that would stand midway between the clinical psychologists and the medically trained psychiatrists of today. To develop this new profession will require state and federal subsidies for existing clinical facilities and teaching personnel in order to free a larger share of everyone's time for training purposes. It will require the development of a new curriculum that will condense the training period from the 12 to 14 post-college years that the training of a medical psychiatrist now requires to 7 to 8 years after college.

This curriculum would be designed to produce mature behavioral scientists who would be fully trained in basic scientific methodology and who would be laymen only in the sense that they would not have full medical training. It would be administered jointly by medical schools and appropriate university departments, and it would be started in general hospitals, where every student would have contact with patients who are physically as well as mentally ill. Like the degree in basic medical sciences now offered at Harvard Medical School, the foundations of the curriculum would include all relevant elements from the present medical curriculum. To this would be added all essential components from the curriculums of clinical psychology and of dynamic psychiatry. In 1948 I outlined such a curriculum briefly in the *Journal of Medical Education*. Then, as now, my hope was that some medical school, acting jointly with university departments, would conduct a pilot test of the plan by training a selected group of students in this way. For the first 15 years, however, the programs should be concentrated exclusively on training teachers. It takes at least 15 years of training plus clinical experience to develop competent teachers in this field, and without an adequate body of mature teachers it will be impossible to develop this new profession to meet the needs of the community. Therefore, this is a program that would start to yield practical results only in about 25 years. There is one other consideration to keep in mind. For various reasons no psychologist can be a practicing diagnostician and therapist and at the same time continue to carry on his previous professional duties. Therefore, once he is trained for his new tasks, his new social role and his new competence should be made easily recognizable in the community by the granting of a new degree: a doctorate of medical psychology. Thereafter his status should be legalized and clarified by instituting a system of *limited* licensure for the practice of psychodiagnosis and psychotherapy under specifications that would spell out in detail the relationship to medical practitioners that would be required under the law.

It is my hope that out of the current controversy some new experiment of this kind will evolve. Otherwise the controversy will remain a battle between the pot and kettle, deserving nothing from the public but impatience and scorn. In the meantime, I must repeat my warning that headlong legislation will have only catastrophic results and that legislation excluding all clinical psychologists (good, bad, and indifferent) from psychodiagnosis and psychotherapy, and efforts of scientific bodies to block all plans to train them adequately, will only produce a crop of "bootleg" clinical psychologists and "wild" psychoanalysts who will be vastly inferior to the lay psychoanalysts seen at present, many of whom have the highest degree of training and competence.

LAWRENCE S. KUBIE, M.D.
7½ E. 81st St.
New York 28.

"DOCTOR-DRAFT" ACT

To the Editor:—I would like to correct and amplify the brief item, reporting the outcome of my case testing the "Doctor-Draft" act, that appeared in THE JOURNAL on Nov. 6, 1954, advertising page 14. Whether the "Doctor-Draft" act is constitutional was the sole question raised by my suit, and constitutionality was therefore not merely "among other points," as erroneously stated in THE JOURNAL. I contended in my brief that the "Doctor-Draft" act violates the provision of the Constitution that restricts the power "to raise armies" to those laws "which shall be necessary and proper"; violates the constitutional prohibition against ex post facto laws; violates the amendment providing for the equal protection of the laws; violates the amendment prohibiting deprivation of life, liberty, or property without due process; and violates the amendment forbidding involuntary servitude except as punishment for crime.

The Army, in its answering brief, did not contest or dispute the truth of any of the following points offered in my brief as evidence that the doctor draft is unreasonable and unnecessary discrimination against doctors: 1. The act is designed not really to draft doctors but to coerce them into entering the service as "volunteer" commissioned officers. 2. These doctors are not needed to care for military personnel, because, according to the testimony of Surgeon General Armstrong before the Armed Services Committee, more than 50% of the time of doctors in military service is spent in caring for civilians. 3. The law is not necessary to create a pool of doctors for future emergencies, because there remains a fund of 15,000 doctors who are commissioned officers in the reserves not yet recalled to active duty. 4. The law, which deprives doctors of their physical freedom, cannot be justified on grounds of necessity while Congress has not made use of less restrictive alternatives (used during World War II) such as providing for the contract hiring of civilian doctors.

The Army neither disagreed with these statements nor presented any of the arguments that might have been expected. For example, the Army made no attempt to justify the doctor draft on grounds of urgent necessity. There was no attempt in the court of appeals to establish a special and additional responsibility for military service on the part of physicians or to justify my conscription on grounds of my previous military service in the V-12 program. The Army did not try to claim that the extra service required of doctors was compensated for by the offer of commissions and bonuses. The Army's case in defense of the doctor draft was limited to the contention that the constitutional war powers are plenary and that Congress has unlimited power to conscript on its own terms without review by the courts. This view was upheld by the fifth circuit court of appeals in the following language: ". . . whether the legislation is wise or unwise, fair or unfair, necessary or unnecessary, is for legis-

lative, not judicial determination. . . . Congress has the power to raise and support armies. . . . It is not for the judiciary to review . . . how the forces shall be raised, nor of what elements they shall be composed. . . . It is for Congress to say when, who, to what extent, and how they shall be selected."

The Supreme Court, by refusing to review my case, has permitted this opinion to stand. Thus, in the first test case of the first discriminatory draft ever enacted in the United States, such discriminatory conscription of a minority without proof of necessity and, concededly, largely for the benefit of civilians has been found constitutional. I think it will be clear to my thoughtful colleagues that the doctor draft was a giant step toward the regimentation and militarization of this country and that the sweeping and unqualified judicial opinion making discriminatory conscription immune from judicial review has gravely jeopardized the constitutional freedom and equality of all minorities. We doctors have merely been the first victims.

PFC. WILLIAM R. BERTELSEN, M.D.
Neponset, Ill.

"DEAD" HEARING AID BATTERIES

To the Editor:—I was very much interested in Dr. Hewitt's letter published in THE JOURNAL of Nov. 6, 1954, page 1010. Having treated an eye injury incurred as a result of a circumstance similar to that described by Dr. Hewitt, I had often wondered whether other physicians had encountered such cases, but had seen no such reports. My patient was seen on Oct. 5, 1953. The history obtained from his family was that while he was watching a bonfire something exploded and hit him directly in the right eye. Examination revealed a foreign body buried deep within the contents of the eyeball. On removing this object I first thought it was a shell of a .45 caliber bullet, but closer examination and discussion with the family disclosed that this was the brass casing of a hearing aid battery. It was obvious that the eye was completely destroyed, and on Oct. 6 the eye was removed and a glass ball inserted within the socket to make a suitable base for an artificial eye. The patient was discharged on Oct. 10 in good condition.

GEORGE B. RIDOUT, M.D.
Gundersen Clinic
La Crosse, Wis.

RESERPINE

To the Editor:—I am writing to you concerning an unusual incident in which a 20-month-old boy ingested 260 mg. of reserpine (Serpasil). It may be considered unusual because of the few side-effects observed over a two week period of time.

On Nov. 25, 1953, at about 7:00 p. m., the boy, without knowledge of his parents, ingested 260 mg. of reserpine. Shortly thereafter he was put to bed. At 11:00 p. m. he awoke crying and quite lethargic. He was visibly flushed, and temperature was 101.4 F, with slowed respiration and rapid pulse rate. It was at this time that his parents discovered that he had taken the reserpine, and because of the time that had elapsed his stomach was not pumped. He was given 2 teaspoons (8 to 10 ml.) of magnesia magma at this time. At 1:00 a. m. diarrhea developed, and he had four loose stools between 1:00 a. m. and 7:00 a. m. During this time and through the next two days much of his time was spent sleeping; he remained drowsy and lethargic, eating little, playing little, but showing no signs of gastric upset other than the four loose stools. It is interesting to note that at any time the child could be awakened for food and water. Coffee was also administered during this period.

On Nov. 26, 1953, at 4:00 p. m., physical examination was repeated and showed a slowly moving, sleepy child with flushed facies, lagging eyelids, and normal temperature. Reflexes were slowed. There was moderate congestion of nasal mucosa, with enlarged tonsils. The pulse rate was 100 beats per minute, and respirations were 18 per minute. Heart sounds were of good quality, and the tachycardia of the previous day had disappeared. No other physical findings were significant. Laboratory examinations showed yellow urine with few strings of mucus, specific gravity 1.012, and no albumin, sugar, or cells present. The hemoglobin level was 70% of normal; there were 4,600,000 red blood cells and 12,800 white blood cells per cubic millimeter, with 20% polymorphonuclears, 77% lymphocytes (a few were atypical), and 3% plasma cells. By Nov. 27, 1953, he was returning to his normal self, with no general abnormality. On Dec. 11, 1953, two weeks later, urine and blood cell count were essentially normal. The hemoglobin level was 66% of normal, and there were 4,200,000 red blood cells and 8,400 white blood cells per cubic millimeter, with 25% polymorphonuclears, 68% lymphocytes, 1% eosinophils, 2% monocytes, and 1% plasma cells.

This certainly demonstrates the wide range of safety of reserpine, inadvertent though it was. Yet the therapeutic dose, even for an adult, is between 0.1 mg. and 0.25 mg. twice daily.

B. ARTHUR HUBBARD JR., M.D.
3240 Cottage Toll Rd.
Norfolk 9, Va.

MASTER TWO-STEP TEST

To the Editor:—In the Nov. 27, 1954, issue of THE JOURNAL, page 1274, is a short letter by Dr. A. N. Gorelik of the Bronx, N. Y., in which he writes, "I wish to state that I have seen several patients who had negative double Master tests and who within a few hours had all the signs of acute coronary occlusion."

At first I did not give this item much thought, and I considered an answer unnecessary. However, many physicians have spoken to me about the letter and have urged me to reply. Apparently, one impression they had gained from Dr. Gorelik's letter was that the two-step test is dangerous and may produce a "coronary accident." Such statements have occasionally been made by others, but, in my experience and that of my associates, they have no validity. In thousands of tests we have not encountered any serious complication. Therefore, I was determined to obtain all the facts from Dr. Gorelik. To date (Dec. 14, 1954), he could give me data on only one patient, whom he had referred to a cardiologist for a two-step exercise test. From the latter physician I learned that the patient was having pain at the time of the test, and this cardiologist now believes the patient was already in the premonitory phase of the occlusion. Therefore, the test should not have been performed and the occlusion would have occurred in any case.

The second implication of Dr. Gorelik's letter is that the double two-step test may fail to indicate the presence of coronary disease. Actually, we were among the first to state that this was so in about 5% of cases. In other words, it shows abnormality in about 95% of patients with coronary disease. When one considers that many patients are asymptomatic up to the moment coronary occlusion develops and that many others make a complete functional recovery within several months after an occlusion, one begins to realize how complex and unpredictable is the problem of atherosclerosis of the coronary arteries and that a 95% "batting average" for a test in medicine, taken by itself without clinical correlation, is really very good. Incidentally, it was not a double two-step test that was performed on Dr. Gorelik's patient, but a single two-step. It is only when a double two-step shows no abnormality that causes other than coronary disease should be considered. In conclusion, the facts provide no scientific basis for the statement in Dr. Gorelik's letter.

ARTHUR M. MASTER, M.D.
125 E. 72nd St.
New York 21.

SOCIAL SECURITY

To the Editor:—I wish to reply to Mrs. Florence Chieffo, whose letter appeared in THE JOURNAL of Sept. 11, 1954, page 194. Mrs. Chieffo's letter is well written and full of adjectives of literary character. But I do not think she really means it. It seems to me she was carried by the words beyond her real intentions. She is probably speaking for herself. It is her privilege to speak for herself, but not to insult good things and good people and those who try to do good for others. Maybe Mrs. Chieffo is rich, or at least comfortable. But most physicians are not, and some, or most, might be glad to get some aid one day when, after an inventory of their life, they find that they have not been financially successful.

I came from a foreign country where, when somebody is rich, he is really rich, and when he is poor, he is really poor. I have seen persons work hard all their lives and accumulate nothing at the end of their term. If a system of security, I thought in those days, were to exist by which one could be assured of the minimum physical needs, that, I thought, would be very Christian. In this country, America, also, there are poor people. There are poor physicians too, for one reason or another. They will need help some day. Why deny it to them? I have to admit (although I personally hate governmental interference in private affairs; I am not a Socialist and I do not desire socialized medicine) that there is a need for social security in general. Maybe it is not perfect, but the principle of it is good. If it does not please you, it does not mean it is not good.

HENRI RATHLE, M.D.
Jamesport, L. I., N. Y.

OSCAR B. HUNTER MEMORIAL AWARD

To the Editor:—To honor its greatly respected secretary, the late Dr. Oscar B. Hunter, and to encourage investigators in the broad field of therapeutics, the American Therapeutic Society has established the Oscar B. Hunter Memorial award. This prize is given in recognition of an outstanding contribution to therapy by a person or a team, especially those not already recipients of distinguished awards. The term therapy is used in its broadest sense, including not only the use of drugs but the use of any procedure or device of benefit in the treatment of patients. This award consists of a bronze medal struck in the likeness of Dr. Hunter and appropriately engraved with the name of the recipient. In addition, the winner of the award is furnished with traveling expenses to the meeting at which the award is made, during which he will be expected to present a paper covering the work forming the basis of the award. The deadline for receiving nominations for the 1955 award is Feb. 15. The society feels that this is a very important project and one that will serve as a stimulus in the field of therapy. Those interested in making nominations can obtain further details by writing to me.

HARRY E. UNGERLEIDER, M.D.
Equitable Life Assurance Society
393 Seventh Ave.
New York 1.

UNWED MOTHERS

To the Editor:—I should like to invite the attention of readers of THE JOURNAL to the House of Mercy located in Washington, D. C., at Klingle Road and Rosemont Avenue, N. W. (telephone COlumbia 5-5229). This is a nonprofit, nonsectarian institution for unwed mothers and their babies. It has been endorsed by both the clergy and the medical profession. The finest medical and dental care is provided; religious services (optional, of course) are held regularly. Anyone who needs the services offered by the House of Mercy is welcome, regardless of where her home might be. Many of those who have been cared for in the House of Mercy came from places other than Washington. A girl who comes to the House of Mercy is asked to make a small payment to defray the cost of her care. This is only a fraction of the total cost, however, and in cases of need no payment is required. The rest of the expense of running the institution comes from public donations, a phantom dinner, a cake and apron sale, and investments.

Everyone who reads this letter is a potential guide in directing someone to the House of Mercy. Such an act can be a most satisfying act of humanity.

J. EARL KADAN, M.D.
Medical Director
House of Mercy
Klingle Road and Rosemont Avenue, N. W.
Washington 10, D. C.

MEDICINE AND THE LAW

Following is the second of a series of articles on the federal income tax law that is being prepared by the Law Department for publication in THE JOURNAL.

FEDERAL INCOME TAX: BUSINESS ENTERTAINMENT EXPENSES

Ordinarily, expenditures for entertainment and gifts are social and personal expenses, deduction of which from taxable income is prohibited by the 1954 Internal Revenue Code. If an expenditure is to be considered deductible, the burden is on the taxpayer to establish that it has a direct relationship to the conduct of his business or profession and that business benefit is reasonably to be expected from the payment. In the reported cases in which expenditures for entertainment have been allowed as a deductible business expense, the taxpayers have named or described the customers or clients entertained.

CASES OF DISALLOWED DEDUCTIONS

Bernard L. Shackleford, 7 T. C. M. 694.—The Tax Court disallowed a deduction for entertainment expenses by a surgeon because no record had been kept of the persons entertained and there was no proof of the business benefit derived from such expenditures. The court held that the burden of proof was not met "by the vague statement that the petitioner hoped to derive some business as a result of the expenditure." The petitioner, Dr. Shackleford, also deducted sums expended as a consequence of the position of his wife as president of a medical society auxiliary. The court denied the deduction, stating:

> The sums . . . have not been identified as to amount or purpose. The year in which she held this office and these expenses were paid is not stated, and the evidence does not show that expenditures of this nature were ordinary and necessary expenses of petitioner's practice.

The deduction could have been disallowed simply because it was not identified as to amount or year paid. Instead, the court went out of its way to state that the evidence did not show that such expenditures were ordinary and necessary expenses of the doctor's practice. In other disputes with the Internal Revenue Service, the claim that a doctor is referred patients by doctors whose wives associate with his wife in an auxiliary has been considered as too remote to establish business benefit.

The court, in the Shackleford case, considered the expenses of promoting horse shows with a view to raising funds for a hospital and a school as not sufficiently related to the petitioner's medical practice to constitute an ordinary and necessary business expense. His expenditures for wedding presents were also denied because he "did not state the amounts he expended on wedding presents . . . the number of such gifts or the names of recipients, nor show any instances in which his services as physician or obstetrician were sought by such persons." Apparently, the court would have been ready to allow a deduction for wedding presents if the doctor had been able to produce records indicating the names of the recipients together with the amounts spent, supported by evidence that on some occasions he treated such persons as patients.

Richard A. Sutter, et al. (21 T. C. 170).—Dr. Sutter operated an industrial clinic. His clients were the commercial and industrial organizations that employed his patients and the insurance companies that insured such organizations. He did not secure patients by referrals from other doctors and patients, nor did his private practice involve any substantial number of patients who consulted him of their own volition. Dr. Sutter claimed the following items as business deductions: 1. The cost of flowers sent to nurses' groups, hospitals, and Christmas parties and of candy and tickets to the Police Relief Association benefit given to telephone operators, elevator operators, secretaries, and parking lot attendants. 2. The cost of a hunting trip. 3. Gifts to medical associates. 4. The cost of printing copies of an article written by him concerning industrial surgery. 5. The cost of his own meals in attending numerous luncheons of the chamber

of commerce and the hospital council. 6. The cost of entertainment of other physicians and their wives and of entertainment of persons connected with commercial organizations and insurance companies who were in a position to enhance his practice as an industrial doctor. 7. The cost of maintenance and depreciation of a cabin cruiser.

The court allowed 25% of the amounts claimed under items 6 and 7 as expenditures for entertainment and for cruiser expense and depreciation as ordinary and necessary expenses of Dr. Sutter's "trade or business." All of the other items were disallowed. The court said:

> The items which we think must be wholly disallowed are those claimed for gifts to elevator operators, parking lot attendants, hospital employees, and others in similar occupations; the amounts spent for a hunting trip as to which there is inadequate proof of a direct connection with petitioner's business income . . . ; gifts to various medical associates; and the expense of publishing an article circulated by petitioner to a miscellaneous group of recipients even though some may have included those with whom petitioner had business relations . . . . It is impossible to conclude that petitioner has borne the burden of showing in what respect and to what if any extent these items contributed to the earning of his income . . . .
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> The deduction for the cost of lunches was apparently almost entirely payment for petitioner's own meals when he attended such functions as meetings of the Chamber of Commerce. There is no evidence that these costs were any greater than expenditures which petitioner would have been required to make in any event for his own personal purposes. They must consequently be disallowed.
>
> The remaining two items consist of entertainment expenses and the cost of maintenance and depreciation of a cabin cruiser belonging to petitioner. While . . . the total amount of the expenses is not conjectural but has been either stipulated or shown by adequate evidence, we nevertheless regard an allocation as required because it is evident that only a part of these conceded expenditures may be characterized as the ordinary and necessary consequences of petitioner's trade or business. To some extent they were entirely personal in nature, being on the one hand costs of entertainment for petitioner and his family and on the other partly social occasions. In some degree they were also apparently a means of enhancing petitioner's prestige and the future possibility of expanding his clinic business so as to be the means of creating a capital asset comparable to good will . . . . And how these elements, particularly the former, may be separated from actual business expenses is not, in spite of petitioner's careful record-keeping, to any extent discoverable from the evidence. This inexactitude is . . . the result of petitioner's own conduct. Because of these considerations we have found that the amounts deductible by petitioner as ordinary and necessary expenses in the two allowable categories of entertainment and cabin cruiser expenses and depreciation are 25 per cent of those now claimed by him.

Fundamentally, the court interpreted the evidence as establishing the fact that the deductions taken by Dr. Sutter were primarily living costs, expended for the pleasure of his family and himself. He had made no effort to segregate from his entertainment expenses the portion that was for the benefit of his family and himself and therefore essentially personal in nature. Since his entertainment expenses included both personal and business entertainment, the court made its own determination as to which portion should be allocated as business expenses. Possibly, if Dr. Sutter had made an effort to segregate in his records the business portion of these expenses, the court might have been willing to accept his own determinations rather than arbitrarily make its own allocations.

COMMENT

The Sutter and Shackleford cases point up the need for keeping not only detailed records of business entertainment expenses that the physician intends to deduct from his gross income but also supporting explanations showing the business relationship in connection with *each* individual item claimed. Bank records are the best. A good practice is to maintain a separate checking account for your medical practice. All business expenses should be paid by checks drawn on this account. Of course, there are some expenses that it is inconvenient to pay by check. In such cases, a check may be drawn to the maker, indicating on the stub or check the purpose for which the check is made. For example, if a party of doctors who refer patients are being taken to a football game, their names should be noted on the stub of the check drawn to supply funds for the tickets. If a substantial amount of business entertainment is customary, it is desirable to use charge accounts. Many hotels and restaurants honor credit cards or permit charge accounts. Charge accounts may also be maintained with ticket brokers. A notation may be made on the statements as they are received for payment, indicating the names of the persons entertained. The person claiming such deductions must be prepared to prove from patients' records or by other documentary evidence that his professional income was influenced by the persons entertained.

MISCELLANY

CONGRESS ON OBSTETRICS AND GYNECOLOGY

The sixth annual American Congress on Obstetrics and Gynecology met at the Palmer House in Chicago, Dec. 13 to 17, 1954. It was sponsored by the American Committee on Maternal Welfare and the American Academy of Obstetrics and Gynecology and was attended by about 3,500 physicians, nurses, public health officials, and hospital administrators.

MORTALITY

Drs. Lyle G. Phillips and Toru Nishigaya of Honolulu told how, in the Kapiolani Obstetrical and Gynecological Hospital, the maternal mortality rate was reduced from 0.865 deaths per 1,000 deliveries in 1947 to none in 1952 and 1953, with a fetal mortality rate of less than 2% throughout the period 1947 to 1953, or about one-half of the rate in the United States. Members of the hospital staff are permitted to operate on a basis of self-discipline rather than imposed discipline. The only restraint is that no member of the staff should undertake procedures that, in his own judgment, he is not qualified to perform. In the seven year period only one doctor was dropped for failure to adhere to this policy. The plan provides for (1) a continuing educational program, (2) monthly review of all cases, (3) consultant service without cost to patient or doctor unless otherwise arranged, and (4) modern facilities.

ANEMIA IN PREGNANCY

Dr. Roy G. Holly of the University of Nebraska College of Medicine said four out of five normal patients show decreases in blood values, to a variable degree, in pregnancy. He ascribed minimal or moderate decreases in hemoglobin to an iron deficiency and said that physiological anemia does not occur in pregnancy. In a series of 207 pregnant women, 94 were treated with iron, 58 were treated with iron and cobalt, and 55 were in a control group, receiving neither. A hemoglobin level of 12 gm. per 100 cc. has been found to be about the minimal normal hemoglobin level for women in the pregnant state. Only one-third of the patients not receiving supplemental iron maintained hemoglobin levels above this value. About 80% maintained a normal hemoglobin level when given an iron supplement with their diet; 90% maintained a normal hemoglobin level when given a combination of iron and cobalt. No toxic manifestations associated with its use were observed. A significantly higher proportion of patients receiving iron and cobalt delivered with a hemoglobin level above 13 gm. per 100 cc. when this group was compared with those receiving iron alone. It was concluded that every pregnant woman should receive iron during pregnancy. This should preferably be administered late in pregnancy, when the iron demands are the greatest.

ENDOMETRIOSIS

Dr. George H. Gardner of Northwestern University Medical School said that the difficulty with pelvic endometriosis is that, when ectopic endometrial deposits become engorged with blood and break down in hemorrhage like the normal endometrium, there is no place for the blood to go. Thus, cysts containing syrupy, chocolate-colored old blood or bloody fluid are a characteristic finding. As these grow or spread, there is pressure on organs within the abdominal cavity. There is no way to limit the action of the ovarian hormones on endometrial tissue. In severe cases with formation of large cysts or symptoms of dangerous pressure, because it is difficult for the surgeon to find and remove all the abnormal deposits, the ovaries may be removed. Previously unsuspected endometriosis is often found at an abdominal operation performed for some other cause. In from 20 to 75% of women with endometriosis there is relative infertility and the disease is not discovered until the patients

seek an answer as to why they have failed to conceive. Since endometriosis is often found in comparatively young women, every effort should be made to conserve ovarian tissue. The surgeon who encounters extensive, previously undiagnosed endometriosis while operating on a young woman finds himself in a real dilemma. He may be censured if he removes the ovaries and induces a premature menopause, and he may be criticized for his lack of courage if he preserves ovarian tissue when he cannot remove all of the endometriosis, thus not only failing to relieve symptoms but also exposing the patient to the risk of a second operation later. The speaker urged conservative treatment whenever possible, especially in the less extensive cases, because such management makes for happier, more grateful patients.

Factors influencing the choice of treatment include the age of the patient, her desire for children, the extent of the lesions, and the amount of her discomfort. Although often the larger, symptom-producing lesions can be removed and an essentially healthy uterus, a tube, and an ovary or part of an ovary can be saved, in the young woman whose childbearing potentiality is to be spared the nonrecurrence or nonspread of the disease cannot be assured: Most young women who have never given birth to a child are willing to run the risk of a second operation when given an opportunity to become pregnant. The removal of an obvious endometriosis improves fertility in a fair percentage of patients. The palliative treatments open to the patient are: (1) watchful expectancy, (2) temporary inhibition of cyclic activity in the displaced endometrium either through hormonal treatment or by subcastration doses of x-rays, and (3) conservative surgery in which the childbearing function is preserved and as much as possible, but usually not all, of the endometriosis is removed. Watchful expectancy is justified only for patients who are cooperative, report regularly, and follow instructions. Hormonal treatment may have unpredictable and undesirable side-effects such as growth of hair, acne, and hoarseness. Irradiation has the disadvantage that the effects are difficult to control. If conservative surgery is used, even though all endometriosis is removed, the patient still retains the potentiality of lesions developing in the future and should be examined regularly to detect the appearance of new lesions.

HEART DISEASE

Dr. Olga Hansen Litzenberg of Minneapolis said that, with early appraisal, frequent examinations, and vigorous medical care, in expectant mothers with heart disease the death rate can be reduced to 1% or less. About 2% of obstetric patients have an organic heart disease. In 85 to 90% of these the heart disease is rheumatic. The others have congenital defects, hypertension, infections, or some other form of cardiac damage. Next to a history of heart failure or the presence of fibrillation, age is the most important consideration in advising or approving pregnancy in a woman with cardiac disease, because of the inevitable progress of myocardial damage. The years between 23 and 35, after the cessation of rheumatic activity and before the beginning of vascular degeneration, are the least dangerous. The natural history of the disease and not the temporary complication of pregnancy results in cardiac failure and invalidism. Once the cardiac dangers of pregnancy are passed, the heart is as good or as bad as it was before, except for being nine months older. The earlier a cardiac patient comes for obstetric advice the better; preferably it should be before marriage. The doctor must remember that the strain of child care after delivery lasts much longer than nine months and is not eased by the skill of the obstetrician.

EMOTIONAL BASIS OF SYMPTOMS

According to Dr. Mary E. Griffin, psychiatrist at the Mayo Clinic, the emotional conflicts of women find special physical expression in gynecologic symptoms. Adolescent and adult conflicts depend on specific aspects of the child's early parental relationship and are reflected in menstrual, sexual, or painful symptoms. Development of these symptoms depends on early interpersonal experiences and the hormonal effects that ensue. The gynecologic result may be seen in (1) painful symptoms such as dysmenorrhea without structural change, (2) symptoms associated with variation of function such as functional bleeding, and (3) symptoms associated with actual tissue change, such as pseudocyesis. In all of these disorders interchange of physiological and psychological factors continues. During the first three years of life the relationship with the mother is of primary significance. Without a truly loving relationship with a mother during these years there is never a proper integration of subsequent experiences. During the ages of 4 and 5, the girl is testing out the rudimentary sexual feelings toward her father, with the mother as a benevolent competitor. The girl who is comfortable with her mother identifies herself constructively with her. This psychological process, combined with biological factors, permits a growing heterosexual orientation on which pubertal factors can act. If, however, the mother has been neurotically overprotective or rejecting, the girl is not free to explore her feelings toward her father. In such an instance, the neurotic relationship between mother and father is equally frustrating. Frequently the father unwittingly seeks an outlet in his daughter, who is eager for warmth and affection from some parent. The equilibrium of emotionally disturbed parents is upset by the child's growth and development, and their conflicts are, in turn, reflected in the child. Elective surgery should be undertaken only after proper evaluation of the patient's emotional reaction to it. Surgery will be most successful if carried out in periods of emotional stability.

BREAST DEVELOPMENT

Dr. Goodrich C. Schauffler of Portland, Ore., said illegitimate births in the "teen-age" bracket have doubled in the last 15 years. This depressing fact indicates a greatly increased awareness of sex in the younger age group, stimulated and maintained by sex hysteria, which is a calculated instrument of modern journalism and so-called entertainment trends. Anomalies of the breast in childhood and adolescence are brought to the attention of the surgeon more often than in the past because of Hollywood's influence and the insane emphasis by modern advertising and the press on this appendage. Many girls scarcely into adolescence already are subject to a bosom-inferiority complex and wear miniature "falsies." This is a peculiar, modern intellectual distortion that cannot be dismissed easily. As physicians, we must under no circumstances disregard the psychic influence of such matters on our youngsters. It can easily be serious. Dr. Schauffler attended one patient who attempted suicide and saw several young patients with serious mental derangements resulting from real or fancied breast irregularities.

INDUCTION OF LABOR

Dr. Edward H. Bishop of Philadelphia said that induction of labor eliminates last-minute rush and excitement. He presented a series of 1,000 cases of induced labor among 8,787 patients in Pennsylvania Hospital between Dec. 1, 1951, and Sept. 24, 1954. The results were most satisfactory if the women had had children previously and were selected because of favorable conditions. Too often the multiparous patient arrives at the hospital well advanced in labor and is placed at once on the delivery table, where she may or may not be attended by her own obstetrician. Under these circumstances, in many instances, her delivery is performed without adequate preparation. Admission at a preselected time permits the obstetrician to carry out one of his primary responsibilities, that of being in close attendance during the entire labor of any multipara, rather than rushing away from other necessary duties only to arrive just in time to "catch the baby" while the imminent delivery may have been delayed by anesthesia until he reached the hospital. Dr. Bishop induces labor by rupture of membranes and administration of oxytocin. All deliveries were of full-term babies. The important factor in the success of induction was rupture of the membranes and not the use of an oxytocic drug. The latter served merely to minimize the latent period from rupture of the membranes to the onset of uterine contractions. The average duration of labor in 835 patients who had had children previously was 4.1 hours, and in the 165 primiparas the average was 7.4 hours. Of eight fetal deaths, six were due to developmental defects or hemolytic diseases. There were only two unexplained fetal deaths. Maternal complications were experienced in 26 instances, but no mother died.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Long-Term Control of Severe Bronchial Asthma with Oral Cortisone. R. S. Savidge and W. Brockbank. Lancet **2**:889-893 (Oct. 30) 1954 [London, England].

Some cases of chronic asthma can be effectively controlled with moderate doses of cortisone given orally, provided the dosage is maintained. Of 13 patients treated with cortisone, 2 with emphysema did not improve, although they lost some of their bronchospasm. Cortisone did not prevent two patients from passing into a fatal status asthmaticus. Euphoria was present in the patients in whom treatment was successful and also in one of the 11 control patients. It does not seem likely that so great a proportion of patients could be relieved by euphoria alone. In most cases in which treatment was beneficial the patient gained weight. Some of this must be attributed to better general health, because the one control patient who improved also gained weight. There were no significant rises in blood pressure and no trouble with other side-effects. Three patients had pneumonic episodes that were successfully overcome with antibiotics without the discontinuation of the daily 50 or 75 mg. dose of cortisone. Patients do not relapse as soon as the amount of cortisone is reduced below their critical dose; reductions must therefore be very slow. It must be presumed that when treatment starts it will have to be maintained indefinitely. Only those patients in whom every other treatment has been tried and has failed should be chosen. Until more experience is gained, severe bronchopulmonary infection, the presence or history of cardiac faliure, and tuberculosis should remain definite contraindications. Cortisone treatment may be dangerous to life in some undefined types of asthma. Judging from the present series, patients who do not respond to 75 mg. or less on long-term maintenance may do so with bigger doses, but it would appear that the end-results of cortisone may be much worse than the asthma. If an asthmatic patient cannot be controlled with less than 100 mg. daily, treatment with cortisone should be abandoned.

Pattern of Hereditary Susceptibility in Rheumatic Fever. M. G. Wilson and M. Schweitzer. Circulation **10**:699-704 (Nov.) 1954 [New York].

The families of 291 selected parents, including 646 children, were under continuous medical supervision for an average period of 10 years. The parents selected included 224 members of the pediatric cardiac follow-up clinic of the New York Hospital, 24 consecutive patients with rheumatic heart disease admitted to the Lying-In Hospital, and 43 brothers or sisters of rheumatic members of the cardiac clinic. Forty of 121 children from genetically susceptible families were affected with rheumatic fever, as compared with 3 of 525 children from nonsusceptible families. Genetic analysis of the various mating types gave good agreement with simple recessive inheritance while excluding other mechanisms. Corroboration of the previous conclusion that rheumatic fever susceptibility is inherited as a simple recessive trait was obtained.

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Tuberculosis and Coalworkers' Pneumonoconiosis. A. L. Cochrane. Brit. J. Tuberc. **48**:274-285 (Oct.) 1954 [London, England].

Evidence produced by Cochrane's study in the Little Rhonda Valley mining community in Wales, England, confirmed the suggestion made by other workers that increasing pneumonoconiosis appears to be associated with a decreased case fatality rate and an increased attack rate of tuberculosis with progressive massive fibrosis. On the hypothesis that the rate of appearance of simple pneumonoconiosis in coal miners depends simply on the concentration of dust to which they are exposed and the time of exposure, simple pneumonoconiosis will tend to develop in miners exposed to relatively low dust concentrations to the extent of category 1. This will greatly reduce the case mortality of tuberculosis without causing any pronounced rise in the attack rate. Exposure to higher dust concentrations for the same time, or the same dust concentrations for a longer time, will lead to the development of category 2, and subsequently category 3, simple pneumonoconiosis. This will lead to a pronounced increase in attack rate, and as a result the mortality rate of the group as a whole will begin to rise again. Thus a little dust exposure gives the beneficial effect of the change in case mortality without the added risk of the rise in the attack rate. To explain the mechanisms of these suggested actions of coal dust, the concept is proposed that the decreased case mortality rate is caused by a purely physical effect of the coal dust, i. e., that of producing fibrotic lesions, while it seems possible that the increased attack rate found to be associated with categories 2 and 3 of simple pneumonoconiosis might be caused by the quantity of free silica in the lung, i. e., by the chemical properties of the coal dust, which is not a pure substance and contains usually about 1 to 2% of free silica. All miners and ex-miners in the Little Rhonda Valley with chest roentgenograms showing simple pneumonoconiosis, categories 2 or 3, with and without early progressive massive fibrosis, were grouped according to the years they had spent exposed to coal dust on the coal-getting shift at the coal face and to stone dust; it was assumed that the stone dust will have a higher content of free silica than the coal dust. Results, however, did not reveal a higher percentage of stone work in the industrial histories of those miners with early progressive massive fibrosis compared with those without progressive massive fibrosis. Although definite conclusions could not yet be reached, the simple hypothesis is suggested that a little coal dust retained in the lungs has a definite therapeutic effect, whereas large accumulations increase the attack and mortality rates from tuberculosis.

Hernia Through the Esophageal Hiatus Simulating Coronary Pain: Report of Fifty Cases. J. E. Holoubek, W. H. Carroll, R. B. Langford and G. M. Riley. South. M. J. **47**:1043-1049 (Nov.) 1954 [Birmingham, Ala.].

Holoubek and associates in discussing herniation of a portion of the cardia of the stomach through the esophageal hiatus of the diaphragm stress the fact that in many patients with this disorder the symptomatology points to the heart, often simulating angina pectoris or coronary disease. They observed in the course of the past three years 50 patients in whom the symptoms were strongly suggestive of coronary disease. The histories of 12 patients are presented in detail. The pain was described as substernal in 48 of the 50 patients; usually it was situated in the lower left substernal region. One patient had right substernal pain. Two had pain at the apex of the heart. The pain was usually acute in onset, occasionally vise-like, but usually described as a deep boring type of pain. In five patients it radiated through to the back. Fourteen patients reported a radiation to the left shoulder and 16 complained of radiating down the inner surface of the left arm. In one patient the pain radiated down both arms. One patient complained of radiation only down his right arm. As regards precipitating factors, the author says that 29 patients reported pain after eating a heavy meal. An important diagnostic point is the occurrence of pain after lying down. This

was present in 21 of the cases. Ten patients had onset of pain when they sat in a cramped position or wore a tight abdominal binder or corset. Many of the patients were taking glyceryl trinitrate tablets. Some got up and took a tablet and got relief. It was later shown that getting up afforded relief without the use of glyceryl trinitrate. Many patients took several tablets daily without relief and discarded the use of this drug. The duration of symptoms is one of the most important diagnostic points. A patient said, "I have had a heart attack every night for 25 years." Another had heart pain for 20 years and another for 15 years. A careful history will often suggest the presumptive diagnosis of diaphragmatic hernia. The ages of the 50 patients ranged from 37 to 73 years, the average was 51; 18 were women. In 25 of the patients a diagnosis of heart disease had been made, and all 50 patients thought that the substernal pain was due to the heart. Thirty-five patients had associated indigestion. Three patients had surgical repair of the hiatal hernia. Two of these patients requested it because of the recurrent annoying "heart pain." Medical treatment, with explanation of the cause of the pain and reassurance that it is not the heart, is usually satisfactory. Weight loss, antispasmodics, sleeping in a semisitting position, small meals, and avoiding abdominal binders are also essential in medical management. Careful fluoroscopic studies with the patient in the Trendelenburg position doing the Valsalva maneuver after a swallow of barium are essential for a correct diagnosis. The importance of determining the cause of the "heart pain" is obvious. Many patients have been semiinvalids for years because of the repeated "heart attacks." Explanation and reassurance are essential.

Anticholinergic Agents in Treatment of Peptic Ulcer. E. C. Texter Jr. and C. J. Barborka. Postgrad. Med. **16**:449-452 (Nov.) 1954 [Minneapolis].

Anticholinergic agents comprise a variety of substances that interfere with the effects of acetylcholine and are therefore parasympathetic depressants. While a number of drugs have anticholinergic activity, this discussion is limited to the newer quaternary ammonium compounds that have been introduced for the treatment of peptic ulcer. As with other therapeutic agents that have been employed in ulcer therapy, the initial reports were extremely enthusiastic. Now, after some time has passed and controlled studies have been carried out, Texter and Barborka feel that their true value can be estimated more closely. There is general agreement that the anticholinergic drugs are useful in the symptomatic treatment of an active ulcer. This symptomatic relief is frequently so dramatic that initially some physicians recommended that these drugs constitute the sole treatment of peptic ulcer. However, it soon became apparent that such treatment was hazardous to the patient, and it is now recommended that anticholinergic drugs be used only as an adjunct to conventional medical management. Should they be employed for all patients with peptic ulcers or limited to a certain group of patients? Are there any contraindications to their use? How should they be employed? For the patient who has occasional mild symptoms routine medical management without the use of anticholinergic agents is probably sufficient. If an ambulatory patient's symptoms persist despite good medical management, the addition of an orally given cholinergic blocking agent frequently gives symptomatic relief. It is important to realize that such relief does not necessarily indicate healing of the ulcer. Silent bleeding is a not infrequent occurrence in patients who are using anticholinergic drugs. The anticholinergic agents are contraindicated in the presence of obvious pyloric stenosis and in patients with prostatic enlargement producing obstruction of the bladder neck. They are also contraindicated in patients who have glaucoma. Although they are sometimes used in the treatment of patients with bleeding ulcers and also patients with partial gastric retention, their usefulness in these situations is questionable. With regard to the prevention of recurrences, the authors cite a controlled experiment with methantheline, which was carried out over a two year period on 250 patients. The patients were evaluated without knowledge of whether methantheline or atropine sulfate had been taken. It was found that those taking methantheline were symptomatically improved and had had somewhat fewer and milder recurrences than those taking atropine. The recurrence rates were high in both groups, 75% in the group taking methantheline and 90% in the group taking atropine. When the results were separated into mild, moderate, and serious cases, the best results occurred in the group of patients whose ulcers had been classified as mild prior to treatment, whereas in the group with severe ulcers it mattered little whether atropine or methantheline had been used. The incidence of complications and necessity for surgery in the two groups were identical at the conclusion of the two year study. The failure of the anticholinergic agents to prevent recurrences may be due to hormonal factors. The authors conclude that, although they do not cure peptic ulcers, the anticholinergic agents are useful adjuncts to the medical management of peptic ulcer.

The Value of Gastroscopy. H. Laurens Jr. J. Kansas M. Soc. **55**:559-563 (Oct.) 1954 [Topeka, Kan.].

Of 200 successful observations obtained in the course of 250 gastroscopies carried out by Laurens, a normal stomach was visualized in 81, hypertrophic gastritis in 39, atrophic gastritis or gastric atrophy in 29, carcinoma of stomach in 12, benign gastric ulcer in 12, benign tumors in 2, superficial gastritis in 5, postoperative stomach in 12, and miscellaneous conditions in 8. Of seven unsuccessful examinations, lack of cooperation and pronounced kyphosis was responsible in three, lack of cooperation caused by language barrier in one, and hiatal hernia in three. The gastroscopic diagnosis in eight cases proved to be wrong either by subsequent surgical intervention or by clinical follow-up. A correct diagnosis was made only by gastroscopy in 11 cases. The two representative groups of 39 cases of hypertrophic gastritis and of 29 cases of atrophic gastritis or gastric atrophy were included only to suggest that the gastroscopic findings may possibly help the clinician in treating certain patients with symptoms but normal roentgenograms. The importance of the combined use of roentgenograms and gastroscopy is stressed. The author's routine preparation of patients for gastroscopy consisted of atropine given by hypodermic injection one hour before instrumentation, spraying of the throat with a solution of 2 to 3% tripelennamine (Pyribenzamine) at the beginning of the examination, followed within 5 to 10 minutes by an intravenous injection of 50 to 100 mg. of meperidine (Demerol) hydrochloride; after the administration of meperidine a no. 12 Ewald tube was introduced in order to empty the stomach of any overnight secretions, and after that the gastroscope was passed with the patient in the left lateral position. Illustrative cases are described in four men and three women in whom gastroscopy revealed a typical infiltrating carcinoma of the stomach, a definite jejunal ulcer, a tumor-simulating hypertrophic gastritis, a small superficial hemorrhagic erosion on the lesser curvature, a benign polyp prolapsing back and forth through the pyloric sphincter, a large bleeding polyp on the lesser curvature of the antrum proximal to the pylorus, and a bezoar respectively. Gastroscopy should be considered as a routine method of examination in every patient with unexplained upper gastrointestinal symptoms.

Enlargement of the Parotid Glands in Alcoholic Cirrhosis. H. Bonnin, G. Moretti and A. Geyer. Presse méd. **62**:1449-1451 (Oct. 27) 1954 (In French) [Paris, France].

Bilateral painless swelling of the parotid glands is a common feature in patients with alcoholic cirrhosis. The enlargement is seen also in diseases of malnutrition, e. g., kwashiorkor, both with and without cirrhosis; this is new proof that alcoholic cirrhosis is a generalized disease affecting much more than merely the gastrointestinal tract and liver and that it is analogous to the nutritional diseases. Histological and histochemical examination at biopsy and autopsy showed the glands to be extremely aquiparous. In the adjacent segments there was cellular hypertrophy and hypertrophy of the acini with foci of hyperplasia. The entire secretory cycle was greatly exaggerated. In some cases there was frank adenomatosis. It appears that the aquiparous state is one of exhaustion through hyperfunction. The quantity of salivary amylase was determined; this information added to that given by the histological investigations indicates that the increase in volume of the parotids is an adaptation of the gland tissue to salivary hyperfunction. The physiopathological mechanism of this hyperfunction is unknown.

Chemical Quantitation of Epinephrine and Norepinephrine in Thirteen Patients with Pheochromocytoma. W. M. Manger, E. V. Flock, J. Berkson and others. Circulation **10:**641-652 (Nov.) 1954 [New York].

The results of quantitation of epinephrine and arterenol in the plasma and tumor extracts of 13 patients with pheochromocytoma and in the plasma of small groups of normal subjects and patients with hypertension and various diseases unassociated with pheochromocytoma are reported. The preoperative plasma concentrations of epinephrine-like substance and total epinephrine and arterenol in all the patients with sustained hypertension and pheochromocytoma were significantly elevated (more than 4 mcg. per liter of plasma for the sum of epinephrine and arterenol). Though only two of the four patients with paroxysmal hypertension secondary to pheochromocytoma had an elevated concentration of pressor amines, these concentrations could be significantly increased with a provocative drug, e. g., histamine, in patients with pheochromocytoma but not in patients without such a tumor. It appears thus far in the investigation that chemical estimation of the pressor amines in plasma, if combined with provocative tests in patients with the paroxysmal type of hypertension, is a valuable test for screening patients suspected of having pheochromocytoma. Except in patients with pheochromocytoma, the magnitude of hypertension appears to bear no relation to the level of pressor amines in the plasma. Attention is also called to the occurrence of epinephrine-arterenol release in large amounts in most of these patients during anesthesia and especially after palpation of the pheochromocytomas.

The Adrenogenital Syndrome. R. N. Meyer and A. M. Hindrum. Acta med. scandinav. **150:**227-239 (no. 3) 1954 (In English) [Stockholm, Sweden].

The adrenogenital syndrome must be differentiated from other types of hyperadrenocorticism, especially from Cushing's syndrome. It is due solely to an overproduction of the androgenic substances of the cortex, which are formed in the zona reticularis. (Cushing's syndrome is caused by an oversecretion of glucocorticoids, formed in the zona fasciculata.) In patients with the adrenogenital syndrome, the zona reticularis, the innermost layer, is highly developed in relation to the outer two layers. The following theory of pathogenesis seems reasonable. 1. For some reason the zona fasciculata has a reduced capacity to produce glucocorticoids. 2. To maintain an adequate level of glucocorticoids, the pituitary gland stimulates the adrenal cortex continuously by increased production of corticotropin. 3. The effect of the increased corticotropin production is not restricted to the zona fasciculata. The zona reticularis is also stimulated and may become hyperplastic (or the normal regression of the fetal zone is prevented), resulting in an abnormally high production of androgens. The proper treatment for the adrenogenital syndrome is the administration of cortisone. The case history of a 33-year-old woman is presented. Seven years previously this patient had undergone partial bilateral resection of her hyperplastic adrenal glands, with little or no improvement in her state of virilism. On histological reexamination at the time of her definitive treatment one of the sections showed an abnormal cortical structure that might be interpreted as an atrophy of the glomerular and fasciculate zones with a corresponding thickening of the zona reticularis. The dose of cortisone that proved successful was 37 mg. a day given orally. Estrogen (Stilbofollin) was given periodically in daily doses of 2 mg. by mouth. During this treatment the urinary content of 17-ketosteroids remained normal and the patient felt well. There was notable improvement in body habitus, breast development, frequency of menstruation, and personality. Arthritic pains that had been present in the shoulders and knees disappeared. No signs of overdosage of cortisone or any other disturbance of the hormonal balance were observed.

Hyaluronidase Therapy of Inflammatory and Degenerative Joint Diseases. P. Rössing and H. Lutterbeck. Rheumatism **10:**76-84 (Oct.) 1954 [London, England].

There is good evidence that disturbances of the hyaluronidase-hyaluronic acid system are causative factors in the pathogenesis of numerous diseases of the connective tissue. The authors consider that this disequilibrium is due to a disturbance in hormone metabolism. The hyaluronic acid level was found to be elevated in patients with arthritis, particularly in the synovial fluid of involved joints; it appeared that there was no corresponding local increase of hyaluronidase in the joints. The authors had previously used the permeability-raising properties of hyaluronidase to promote the absorption of effusions. Their success in this prompted them to use the enzyme locally in inflammatory and degenerative joint diseases. After subcutaneous injections of hyaluronidase (Kinetin) over the affected joints, 53 out of 83 patients obtained significant subjective and objective improvement in their joint condition. In 27 of these patients there was complete relief of symptoms. Sixteen had slight improvement, and 14 were unchanged. Therapeutic results were particularly good in osteoarthritis, acute infective arthritis, and toxic rheumatoid arthritis, while those in rheumatic fever and rheumatoid arthritis were less impressive. The pathogenetic mechanism that seems most logical in view of these results and studies is that local disturbances of synthesis and degradation of hyaluronic acid and of the equilibrium between substrate and enzyme are causally related; these may be favorably influenced by local hyaluronidase therapy.

Results of Many Years Conservative Treatment of Peripheral Circulatory Disturbances with Hydergine. O. Eichler and J. Heinzel. Arch. klin. Chir. **278:**568-584 (No. 6) 1954 (In German) [Berlin, Germany].

Of 157 patients with peripheral circulatory disturbances who were treated with methanesulfonates of dihydrogenated ergotoxic alkaloids (Hydergine) at the surgical clinic in Heidelberg, Germany, between 1948 and 1953, 60 had thromboangiitis obliterans (Buerger's disease), 44 arteriosclerosis, 13 Raynaud's disease, 12 arterial embolism, 13 osteoporosis due to trauma (Sudeck's atrophy), 11 indolent ulcer of the leg, and 4 various circulatory disturbances. Patients with mild circulatory disturbances were given 5 to 40 drops of the drug orally three times daily or one to eight sublingual tablets daily; patients with moderate or severe disturbances received 0.3 to 0.6 mg. of the drug daily intramuscularly or subcutaneously in addition to the oral therapy; patients with the most severe disturbances were given additional intra-arterial injections of from 1 to 2 cc. of the drug daily or every second day. The duration of the first course of treatment varied from one to three months; repeated courses were usually adequate when given for four weeks. Some patients required continued treatment, particularly during the winter months. The favorable effect of the drug on the circulation was demonstrated by various tests, such as local blood perfusion of muscle by means of radioactive sodium, walking distance test, leg elevation test, taking of skin temperature, and oscillometry. The patients were followed up for periods up to four years. Twenty-five of the 60 patients with endangiitis obliterans obtained good results, i. e., they were free of complaints, or amputation could be avoided although the patient became not entirely free of complaints. Seventeen of the 60 patients obtained satisfactory results, i. e., increased skin temperature, increased tolerance of cold, extended walking distance, rapid healing of ulcers; edema and pain subsided, the color of the skin was restored to normal, and oscillometric values were occasionally increased. Previous treatment with vasodilators frequently had been unsatisfactory. Twenty of the 60 patients had been subjected to sympathectomy and had recurrences of their complaints but improved with Hydergine therapy. Amputation had been considered in 27 patients but was no longer required in 16, while it could not be avoided in 11. Seven patients died in the course of the follow-up period. There thus remained 42 patients who did not lose an extremity. These results were compared with those obtained in a group of 81 patients with endangiitis obliterans who received predominantly surgical treatment at the same clinic between 1935 and 1947. Forty-two of the 81 patients had been subjected to sympathectomy; the average age of the patients was the same as that in the group treated with Hydergine and the duration of the disease was also the same; only 26 of the 81 patients survived without loss of an extremity. Of 44 patients with arteriosclerosis 10 obtained good and 19 satisfactory results. Of 14 patients in whom amputation was considered, Hydergine therapy prevented it in 7, while it had to be carried out in the other 7. Six patients died

in the course of the follow-up period. The cerebral sclerotic lesions also were favorably influenced. A complete cure was obtained in 7 of the 12 patients with arterial embolism. Eleven of the 13 patients with Sudeck's atrophy and 11 of the 13 with Raynaud's disease responded favorably to Hydergine therapy. Rapid and complete healing occurred in 4 of the 11 patients with indolent ulcer of the leg, and satisfactory results were obtained by additional 6 patients. Thus 72.5% of the authors' 157 patients obtained either good or satisfactory results with early conservative Hydergine therapy, which assumes a favorable position among the various methods of treatment of peripheral disturbances of circulation.

SURGERY

Cancer of the Lung: A Review of Experiences with 1,457 Cases of Bronchogenic Cancer. A. Ochsner, C. J. Ray and P. W. Acree. Am. Rev. Tuberc. **70:**763-783 (Nov.) 1954 [New York].

Of 1,457 patients with bronchogenic cancer admitted to the Charity Hospital in New Orleans, 1,311 (90%) were men and 146 (10%) women. Five hundred forty-six (37.4%) patients were in the sixth decade, 450 (31.9%) in the seventh decade, and 255 (17.5%) in the fifth decade. Cancer of the lung is a disease primarily of men, principally in the sixth and seventh decades of life. The right upper lobe was involved in 27% of the patients and the left upper lobe in 29%; thus the upper lobe bronchi were involved more frequently than any other bronchi. Of 457 patients in whom the microscopic type of the bronchogenic carcinoma was determined, 226 (49.4%) had epidermoid carcinoma, 144 (31.5%) undifferentiated, and 87 (19.1%) adenocarcinoma. Of the total of 1,457 patients, 789 were considered to have operable cancer; 723 of these had exploratory operations, while the others refused surgical intervention. Two hundred fifty-four (35%) of the 723 patients had nonresectable lesions, while resection was accomplished in the remaining 469. The fact that in only 32.1% of the 1,457 patients resection was feasible at the time they were first seen was undoubtedly caused by the long delay (8.7 months on the average) from the onset of the first symptoms until therapy was instituted. Of the 320 patients who had extensive involvement beyond the lung and in whom the resection was palliative only, 6.6% were alive at the end of five years after the operation. Of all the patients on whom a resection was done, 13.5% were alive at the end of five years, and 31% was the five year survival rate in those in whom the lesion was apparently limited to the lung. Of the 668 patients in whom resection was not done, only 17% survived six months and only 1% were alive at the end of two years, even though other palliative therapy such as nitrogen mustard or irradiation was used. It is obvious that in order to increase the salvage rate in bronchogenic carcinoma, the diagnosis must be made earlier, and this can be accomplished only by having men over 40 years of age who have been heavy smokers have routine chest roentgenograms at least every six months. All shadows should be considered suspicious of carcinoma. Only about one-third of the tumors can be visualized by bronchoscopy. By cytological examination of the sputum a correct diagnosis can be made in about 68% of the cases. In 20% of the cases it is necessary to resort to thoracic exploration in order to make a diagnosis.

Chest Injuries—and Iatrogenic Heart Disease. H. Arenberg. Indust. Med. **23:**507-509 (Nov.) 1954 [Chicago].

It is now definitely established that cardiac trauma can result from injuries to the chest whether penetrating or nonpenetrating. If cardiac damage is not manifest immediately after the injury to the chest, careful observation and follow-up studies including serial electrocardiograms may eventually uncover damage to the heart in some instances. However, during the treatment phase of the chest injury or during the follow-up when careful attention is directed by the physician to the chest or precordium, seeds may be planted in the minds of persons with psychosomatic tendencies that give rise to suspicion or fear that there must be something wrong with the heart. This is more likely to happen in a clinic, where less time is spent in explaining to the patient and discussing reasons for certain procedures or examinations, than in a private office. Listening too long with the stethoscope over the heart arouses suspicion, particularly if the injured rib or soft part is over the precordium. The author feels that he himself, in the course of a follow-up study of 250 patients with chest injuries, was the cause that a number of these patients began to be more concerned about the heart than the original injury. Some inquired why so many "pictures" or cardiograms were made, or why the stethoscope or the blood pressure apparatus was so frequently used. For most of these an ordinary explanation seemed to suffice, but in other patients, who were concerned about themselves before, the ground must have been made fertile for the development of iatrogenic heart disease. It is more difficult to be on firm ground in traumatic cases than in nontraumatic, for in the former, when the element of compensation or medicolegal adjudication is pending, there is ample reason for subjective exaggeration. The author presents brief histories of seven patients, in all of whom the initial symptoms were localized over the area of injury and were not necessarily associated with, or referred to, the heart. It was after a long period of treatment, in most instances too long, with incidental remarks by the physicians, that the symptoms began to be referred to the heart, rather than to the local area of injury. However, the impression prevailed that a psychosomatic condition existed, that there was a genuine fear of heart disease, and that the symptoms were aggravated if not initiated by too long treatment and undue emphasis on the heart.

Bilateral Adrenalectomy in the Treatment of Advanced Carcinoma of the Breast. J. E. Strode and C. M. Burgess. Surgery **36:**871-883 (Nov.) 1954 [St. Louis].

Since Dec. 12, 1952, Strode and Burgess performed bilateral adrenalectomy in nine women with advanced metastatic malignant disease, which in eight of these patients was secondary to carcinoma of the breast. There were no surgical deaths, but five of the patients subsequently died of their disease: one, 67 days; one, 94 days; and three, 10 months and more after the surgical intervention. One of the latter three patients died of peritonitis resulting from rupture of a penetrating gastric ulcer. Four of the patients who died did not show worth-while clinical improvement, but the patient with the ruptured ulcer did, since at autopsy no evidence remained of the abdominal carcinomatosis that was present at the time of the adrenalectomy. Four patients are living at 20, 12, 9, and 6 months, respectively, after the adrenalectomy; all show clinical improvement. Their pain is less and appetite improved. Thus, bilateral adrenalectomy does in certain instances relieve patients of pain, gives most a sense of well-being for some time, and, in addition, prolongs life in others. No evidence has been accumulated showing that the procedure is a curative one. While calcium excretion studies were not made in the authors' patients, some of them showed pronounced clinical improvement even though x-ray studies showed bone metastases to be progressive. Maintaining patients in whom adrenalectomy has been done in a state of physiological balance by the use of cortisone given orally was not a problem so long as no added stress or strain occurred with which to deal. Increased amounts of cortisone are necessary when these occur. The death of the patient from perforation of a gastric ulcer emphasizes the necessity for close observation of patients who have a history of gastroduodenal lesions. Such a history may be a deciding factor against employing bilateral adrenalectomy. The advisability, even safety, of administering either estrogens or androgens after bilateral adrenalectomy seems to be a matter of controversy at the present time. It is imperative that the entire adrenal glands be removed, but no difficulty was experienced in this respect, because the adrenals have always been well delineated. The authors believe that adrenalectomy has a place in the treatment of advanced mammary cancer when other more conservative procedures have failed to halt the progress of the disease. To date no method exists that will permit the selection of the patient who will or will not benefit from such a procedure, and hence all such patients are entitled to undergo such surgical treatment if they elect to do so after they and their families are fully aware of the fact that no one can predict whether or not any benefit will ensue. It would seem that enough good results, temporary although they may be, have been obtained to justify this stand.

Cancer of the Breast: A Report of Five-Year Survival at the University of Michigan Hospital. M. F. Bryant Jr., I. Lampe and F. A. Coller. Surgery **36:**863-870 (Nov.) 1954 [St. Louis].

Of 1,227 women with carcinoma of the breast observed at the University of Michigan Hospital between 1936 and 1947, 431 had received primary treatment elsewhere, while 742 had not been treated previously and 57 came only for consultation. The over-all five year survival of these 742 patients was 40.2%. Four hundred forty of the 742 primary untreated patients were considered clinically operable, an operability rate of 59.3%; they all were treated by radical mastectomy; 257 of the 440 patients survived the operation for five years, a five year survival rate of 58.4%. The axillary contents of 197 (45%) of the 440 patients operated on did not disclose carcinoma on microscopic examination; 163 of the 197 patients without histological evidence of axillary spread survived for five years, a survival rate of 82.7%. Of 243 patients (55%) operated on, whose axillary contents showed evidence of carcinoma, 94 (38.7%) survived for five years. The pronounced difference in survival rate for patients with and without positive axillary nodes emphasizes the importance of early diagnosis. It must be emphasized that any discrete lump in the breast should be surgically removed in the operating room and subjected to frozen section and studied by the pathologist. If a diagnosis of cancer is made, one may then proceed immediately with mastectomy and removal of the pectoral muscles and the axillary contents. By this procedure, unnecessary delay in definitive treatment is avoided, and repeated discomfort and expense to the patient are minimized. The authors' statistics do not support the routine use of postoperative irradiation when a complete radical mastectomy is performed.

Partial Resection for Pulmonary Tuberculosis: 100 Cases Analysed. R. S. Francis. Tubercle **35:**238-244 (Oct.) 1954 [London, England].

Francis reviews observations on 100 patients in whom partial resection was carried out for pulmonary tuberculosis between 1947 and 1951, inclusive. The patients were followed up for periods up to six years. Seventy-three patients obtained good results, although nine of these required further treatment at some time after the operation. Thirty-four of the 100 patients had round foci of the larger size, and over 90% of these had good end-results; 2 patients required further treatment to achieve this. No fistulas or deaths occurred in this group. In the 66 other patients, however, 13 fistulas and 9 deaths occurred, good end-results being found in 64% of this group. The operative mortality was 4%. The series was analyzed in respect of the type of lesion and a variety of associated clinical detail. The factors of age, sex, length of history, family history, and the presence or absence of initial symptoms exerted no significant effect on early or late results. The author mentions the following prognostic factors as adverse: inadequate administration of streptomycin preoperatively; unstable disease elsewhere; inadequate localization, that is, ipsilateral disease beyond the confines of the resected area; endobronchitis; the accidental opening of a friable cavity at operation; and sputum positivity. Many of these factors are interrelated. Inadequate chemotherapy would tend to be associated with positive sputum and so on. Consequently an analysis showing the effects of individual factors does not give a valid assessment of the relative importance of each factor. The author feels that a lower limit of 20 gm. of streptomycin is now regarded as a low total, and few patients nowadays receive less than twice or three times this amount in preparation for resection. Furthermore, with the present drug combinations available, drug resistance develops in few patients, and for these reasons alone, morbidity and mortality are nowadays much less than the figures quoted for this series.

Surgical Correction of Chronic Lymphoedema of the Legs. T. Gibson and J. S. Tough. Brit. J. Plast. Surg. **7:** 195-210 (Oct.) 1954 [Edinburgh, Scotland].

A series of 20 patients with lymphedema of one or both legs was treated surgically. The disease was post-traumatic in 4 patients; of the 16 in whom it was idiopathic, it was congenital in one, congenital and hereditary in one, without infectious attacks in 6, with infectious attacks in 5, and with a possible venous factor in 3. There were six bilateral cases in all. The authors' method of treatment is to excise the hypertrophied tissue with the skin covering it and then to strip off the skin in nearly its entire thickness for use as a graft. The leg to be operated on is elevated, in most cases by an ice-tong calliper applied to the calcaneus and permitting access to the whole leg and dorsum of the foot. In cases in which bone traction is contraindicated, the foot is held in a plaster shoe and the operations on foot and leg must be done separately. The authors did not work on upper legs except in one patient who had an unsightly bulge on the thigh. With one exception, in which a 20% loss occurred because of hematoma formation, a 95 to 100% "take" of the free grafts was obtained. The long-term results in the series are discussed in detail; one patient had died of intercurrent disease and two could not be traced. In general, these results were good, particularly in the group that had the one-stage circumferential excisions. The results with this method are cosmetically and functionally superior to those achieved with any other method. The small experience with lymphedema of traumatic origin suggests that operation should be advised with reservation, since the end-result is apt to be poor when the original lesion has resulted in vascular impairment as well as lymphatic blockage. Even if new methods are devised for the correction of lymphatic block, the operation described here will still be necessary in long-standing cases of lymphedema of the leg because of the irreversible fibrous organization of the edematous tissue.

NEUROLOGY & PSYCHIATRY

Surgical Alleviation of Parkinsonism: Effects of Occlusion of the Anterior Choroidal Artery. I. S. Cooper. J. Am. Geriatrics Soc. **2:**691-718 (Nov.) 1954 [Baltimore].

So far surgical intervention in paralysis agitans (Parkinsonism) has consisted mainly in damaging the corticospinal (pyramidal) system, either at the motor cortex or in the cervical cord, and so producing a loss of motor power and some relief of tremor. In 1952 Cooper observed that virtually complete relief of tremor and rigidity followed the accidental occlusion of the contralateral anterior choroidal artery in a man with paralysis agitans. In 1953 he reported that deliberate occlusion of this artery alleviated resting tremor and rigidity without compromising motor power and without producing the "syndrome of the anterior choroidal artery" (hemianopsia, hemiplegia, and hemianesthesia). He describes the gross and surgical anatomy and the arteriographic aspects of the choroidal artery. He has performed surgical occlusion of this artery 40 times in 34 patients (bilaterally in 6). The histories of eight representative patients are presented. The results obtained demonstrate that surgical occlusion of the anterior choroidal artery in paralysis agitans can alleviate resting tremor and cogwheel rigidity in the extremities contralateral to operation. Moreover, advanced disability, masked facies, propulsion and retropulsion, impoverished speech, and deformities have been reversed in certain cases after this procedure. The average duration of tremor and rigidity in the cases reported was 15.6 years prior to operation. The hazards of operation appear to be proportional to the degree of debilitation and vegetative abnormalities that exist preoperatively. The surgical risk is increased in patients over the age of 55 years. The good results produced by the operation have thus far endured for periods varying from 12 to 24 months in cases in which the vessel was properly obliterated. No prediction regarding the ultimate duration of the alleviation of tremor and/or rigidity is possible. The knowledge that the course of paralysis agitans has always been relentlessly progressive makes the outlook guarded. Waiting will supply the answer.

Treatment of Epilepsy with Mysoline (187 Cases Treated). G. Jørgensen. Nord. med. **52:**1400-1403 (Oct. 7) 1954 (In Danish) [Stockholm, Sweden].

In the Philadelphia Colony from October, 1952, to December, 1953, 187 patients with epilepsy, both cryptogenic and symptomatic, were treated with primidone (Mysoline) in doses varying from 25 to 200 cg. daily, averaging about 100 cg. daily, apportioned in two or three doses. The main indication for application was difficulty in controlling the attacks with other antiepileptic agents. In 22 cases primidone was given

alone; in the remaining cases it was combined with other substances. The result of the treatment could be evaluated in 165 cases: it was good in 96 cases, fairly good in 30, 24 cases were unchanged, and 15 were aggravated. The treatment was most successful in grand mal, focal seizures, psychomotor seizures, and combinations of these, and in combinations of grand mal and uncharacteristic absences. No improvement followed in petit mal and in absences with fall. The effect was especially good in the mild and moderately mild cases, but good effect in grave cases was not excluded. In 47 cases the mental state improved. Somnolence and dizziness, side-effects at the start of treatment, were usually transient but in some instances necessitated termination of the treatment.

Herpes Zoster: Review, with Preliminary Report on New Method for Treatment of Postherpetic Neuralgia. F. Schiller. J. Am. Geriatrics Soc. **2**:726-735 (Nov.) 1954 [Baltimore].

Schiller designates postherpetic neuralgia as the ghost of a herpes zoster. The pain usually subsides as the vesicles heal. It is only in cases in which pain lingers for more than a few weeks that one speaks of truly postherpetic neuralgia. It may last only for months, but in unfavorable cases it will last for years and even to the end of the patient's life. The pain is of two types. One is a constant annoying, tingling, burning, and stinging in the affected segment of skin. The other consists of paroxysms, usually in repetitious groups or bouts, or excruciating sharp stabs recurring in the same area many times a day. The first type resembles causalgia; the second is not unlike the pain of tic douloureux. Most remedies that have been advocated are for the alleviation of pain in the acute stage of the zoster eruption. These remedies are not effective in chronic neuralgia. Remedial attempts fall into four categories: (1) analgesics, (2) remedies designed to improve the metabolic or immunologic milieu of nerves, (3) procedures protectively blocking and interrupting the nervous inflow from the peripheral lesions, (4) devices (other than those in the first category) specificially directed toward the central nervous system. The latter include interruption of the pain-conducting pathways, frontal lobotomy, and other psychosurgical procedures. Spinothalamic cordotomy seems to be the most effective surgical approach, especially in neuralgia affecting the lower limbs. The author mentions a method of segmental counterirritation. Following up work on the segmental distribution of pain referred from muscle, it was found that a stimulus such as the injection of hypertonic saline solution into paravertebral muscle would not only produce a transitory pain of segmental distribution but confer freedom from preexisting pain. The method was tried in cases of amputation, causalgia, tabetic, and other intractable pains. The best results, however, were obtained in patients with postherpetic neuralgia. In 10 cases 1 cc. of sodium chloride in a 6% aqueous solution was injected between the spinous processes corresponding to the level of the postherpetic lesion. The needle was directed slightly to the affected side and inserted so as to reach the deep paravertebral tissues. After injection a severe deep ache was experienced for about 10 minutes. This was followed by relief of the neuralgia for periods varying from hours to years. The method proved to be entirely harmless in the small series of patients treated. The author feels that the results were sufficiently encouraging to suggest that others may be interested in further studies to evaluate it.

Measles-Encephalitis: Frequency, Mortality, and After-Examination. J. Steen. Nord. med. **52**:1468-1471 (Oct. 21) 1954 (In Norwegian) [Stockholm, Sweden].

Encephalitis is the most dangerous complication in measles. Antibiotics and chemotherapy are without effect. From 1936 to 1954, 21 patients with measles-encephalitis were admitted to the epidemic department of Ullevål Hospital. Eighteen patients were from the city of Oslo. During the period 24,916 cases of measles were reported in Oslo, which is one case of measles-encephalitis to over 1,300 cases of measles. There has been no increase in Oslo in the frequency of the complication. Four of the five patients who died were girls. All had previously had disorders that might affect the nervous system. Follow-up of the surviving 16 shows that 6 are well; 3 have mild and 6 have grave sequels; one patient has been observed for only three months.

Huntington's Chorea: Review of Four Cases in One Family. M. Hall. Canad. M. A. J. **71**:493-494 (Nov.) 1954 [Toronto, Canada].

The case histories of four siblings, one woman and three men, with chronic chorea are summarized. These patients inherited their disease from their mother, who was affected with it; a maternal uncle was also affected and possibly a maternal aunt. The four patients (one of whom is now dead) have four unaffected living siblings and 10 living children under the age of 17 years. The symptoms in the four patients first appeared in the fourth decade of life and were of such a nature that diagnosis was not certain for some months. All four complained of dyspepsia and epigastric pain, and one had a frank duodenal ulcer. Complaints of nervousness were also a prominent feature, although the predominating characteristic of the disease is the involuntary muscular movements of the choreiform type. The families of the patients were concerned more with the intellectual deterioration, faulty personal habits, and increasing dependence of the patients. Hospital admissions were arranged partly to give the relatives a rest. When out of the hospital the patients were prone to be apprehended by the police, who considered them to be the victims of insobriety. The main problem to be faced is the fate of the 10 surviving children of these unfortunate persons, some of whom are bound to have symptoms in early middle life. It is evident that transmission of the disease cannot be controlled while affected persons are free to have families.

Huntington's Chorea in Northamptonshire. M. J. Pleydell. Brit. M. J. **2**:1121-1128 (Nov. 13) 1954 [London, England].

The incidence of Huntington's chorea in Northamptonshire, England, is about 5 diagnosed cases per 100,000 of the population. No conclusions can be drawn from these small figures in a population of about 263,000, but if this incidence is representative for the country as a whole, then there are at present more than 2,000 persons with this disease in England and Wales. Choreic families appear to come mainly from the partly skilled laboring class. The survey included 61 case histories of the disease; the patients came from 8 different families, and 13 of them were still alive. Six patients were treated with procaine amide, apparently without benefit. Electroencephalographic and serologic investigations were carried out in members of two choreic families. The results were not found to be of any significance in prediction or diagnosis, but the serologic findings may be of value in future work on this subject. Adequate supervision of choreic persons is very desirable because of the heightened sexual interest and fecundity associated with cortical degeneration in the disease. As soon as domiciliary control becomes insufficient, patients should be admitted to hospital. Since there is no treatment for this hereditary disease, attention is drawn to the urgent need for its prevention through the health education of afflicted families.

The Function of the Cerebral Cortex. W. Gooddy and M. Reinhold. Brain **77**:416-426 (Sept.) 1954 [London, England].

Gooddy and Reinhold suggest that parts of the body, voluntary movements, sensations, cognitive behavior, and ideas are not "localized" or "represented" in the brain. Nothing resides in a nerve cell but the chemical constituents, physically disposed. In nervous tissue there are no ideas or sights or sounds or movements. Above all, there are no models or images. Nervous tissue does no more than transmit nerve impulses. By means of experimental procedures, one may observe the results of the passage of an impulse in nervous tissue. One may also introduce a new impulse. Such a procedure may result in movement of a distant part of the body. It may also result in the experiencing of a sensation. Because a part of the body moves in response to cortical stimulation, that part is said to be "represented" in the area of the cortex stimulated. The same part that moves in response to stimulation of the periph-

eral nerve is not said to be represented at the point on the nerve where the stimulus is applied. There is no logical reason for allocating representation to one and not the other. Discussing recent experimental evidence relevant to "representation," provided chiefly by Penfield and Carmichael, the authors show that cortical stimulation never results in such movements as are seen in daily human use. Movements produced by cortical stimulation are never skilled. Stimulation produces vocalization but not speech. Movements of all four limbs occur after removal of a cerebral hemisphere, when the remaining hemisphere is stimulated. Movements occur before the cerebral cortex is myelinated and even if the hemispheres of the brain are grossly deficient or absent. As life proceeds, the brain is trained. This training, which is, fundamentally, the acquisition of use and understanding of symbols, results in superior powers. But the acquisition of such powers carries with it a greater possibility of disability if the brain is affected by disease. The untrained child can suffer severe damage to the brain with little in the way of symptoms, but the adult, fully trained, may be disastrously afflicted in similar circumstances. The authors propose the following hypothesis of cortical function. The cortex (including those parts at present labeled frontal, rolandic, parietal, temporal, and occipital) has no other function but to select, abstract, differentiate, integrate, and condense rhythms or patterns of neuronal activity. They explain how this function of the cortex is necessary for such mental function as the perception of touch, for skilled movements, for visual perception, for memory, for the use of symbols of language, mathematics, music, physics and so on, and for abstract thinking. The history of a patient who had cortical thrombophlebitis illustrates features probably caused by reduction or interference with cortical blood supply and edema of cortical cells. His illness improved rapidly in a few days during treatment with antibiotics. The cortex behaves in much the same manner as the "mechanical brain," which should thus be more correctly described as the "mechanical cortex." The cortex selects, abstracts, and integrates the motion patterns of cerebral activity. Presumably the more active the cortex is in any one brain, the better will that brain resolve and integrate its activity, resulting in superior powers of judgment of sensory relationship, memory, symbol use, and abstract thinking. The difference between the intellectual capacity of a "clever" man and a "dull" man depends therefore not on relative size of their brains but on the amount of activity of their brains.

GYNECOLOGY & OBSTETRICS

The Amenorrhea Produced by Electroconvulsive Therapy. E. B. Tietz. J. Am. M. Women's A. **9**:358-359 (Nov.) 1954 [New York].

Temporary amenorrhea frequently follows an intensive course of electroconvulsive therapy. The physician is often urged by the anxious patient to take positive measures to reestablish the regular cycle. The patient frequently seeks nonpsychiatric help for this purpose. The physicians consulted sometimes give neostigmine (Prostigmin) or hormonal treatment, but the latter may actually result in prolongation of the delay. Experience both in Europe and in this country has shown that the best approach to the usual postelectroconvulsive amenorrhea is a conservative one. The author describes studies on rabbits that helped to demonstrate how electroconvulsive therapies interfere with the normal menstrual cycle. It was found that continued follicular growth with resultant maintenance of high estrogen secretion may result from stimulation by the electrical current, presumably via hypothalamic-pituitary neurohumoral pathways. Such a constant estrus condition can account for the interruption of the cyclic activity in women receiving electroconvulsive therapy as well as its resumption as treatments are spaced further apart. More important, this temporary suspension is not to be considered evidence of endocrine malfunction and hence cause for alarm or anxiety. On the contrary, it is the natural behavior of an intact hypothalamo-hypophysio-ovarian circuit and is evidence of properly responding endocrine function.

Endometriosis Peritonei—Relationship of Pain to Functional Activity. S. H. Sturgis and B. J. Call. Am. J. Obst. & Gynec. **68**:1421-1431 (Nov.) 1954 [St. Louis].

The cause of pelvic pain in endometriosis has not been extensively studied, and failure to recognize its relation to the dynamic physiology of the disease has resulted in misleading concepts. Part of the confusion stems from attempts to force all facets of this multiform condition into a single mold. There is little similarity between adenomyosis and a large "chocolate cyst" of the ovary. The authors limit this discussion to but one type of lesion, ectopic tissue arising in or from the pelvic peritoneum. The characteristic dark "blueberry spots" are never more than a few millimeters in diameter and represent tiny collections of old blood pigment in areas that generally show microscopically recognizable ectopic endometrium. It has been assumed that the cylic endometrial breakdown and bleeding also occurs in ectopic endometrial fragments and that such miniature menses into blind pockets readily explain the clinical incidence of periodic pelvic pain. It is important to recognize, however, not only a diversity of differentiation of ectopic glands and stroma, with a corresponding variation in response to hormonal stimuli, but also a varied reaction of the host tissue bed. The authors point out that it is probable that endometrium displaced onto or under the peritoneum rarely attains sufficient differentiation to develop the special pattern essential for true menstrual desquamation and hemorrhage. Not only is there probably only minor diapedesis into the stroma, but what does occur will be prevented from spreading by the surrounding scar tissue. Second, the radial expansion of fibrosis about a lesion is not a centrifugal invasion by the endometrium itself into surrounding organs and structures but rather a foreign-body reaction called forth by the irritant nature of the central, active areas. Third, it is probable that at times cyclic response in ectopic areas may take place month after month for years before sufficient fibrosis is called forth to restrain the elements that tend to produce swelling, expansion, and pain. By this time, there may be only a minimal amount of pathologically recognizable specific structure deeply embedded in scar. Only such heavy fibrosis is easily palpated as nodular thickening in the posterior cul-de-sac. It is in this stage of the disease, when the endometriosis itself is almost burned out, that the diagnosis is most readily made before operation. This explains why the peak incidence is reported between 30 and 40 years of age. This is not the incidence of origination but reflects the incidence of diagnosis made possibly by the accumulation of unyielding scar. Finally, when pregnancy provided an overpowering stimulus to endometrial growth and differentiation, then these ectopic areas may break through any encapsulating bonds and expand luxuriantly over the peritoneal surface. These soft, decidual masses are then no longer palpable. Similarly, it is likely that prolonged and massive estrogen dosage produces abundant and uncontrollable hyperplasia in ectopic areas. In the surgical extirpation of these lesions it should be necessary only to eliminate the reactive foci and not necessarily the whole area of scar. If by simple cauterization one could destroy all potentially reactive areas, then the relatively mutilating operations designed to remove widely the whole peritoneum of the cul-de-sac would not be necessary to control the cyclic pelvic discomfort. This conclusion that only the centrally responding tissue need be extirpated is unfortunately of more theoretical than practical value, since one cannot recognize grossly the microscopic nests of specific glands or stroma in widespread scar.

Potassium Permanganate as an Abortifacient. C. C. Lindsay and C. V. Ward. Canad. M. A. J. **71**:465-467 (Nov.) 1954 [Toronto, Canada].

During the years 1935 to 1954 there were 37 admissions to the Montreal General Hospital for potassium permanganate burns of the vagina. Only seven of these admissions occurred before 1949, indicating that the use of potassium permanganate as an abortifacient is on the upgrade. In two patients the lesions resulted accidentally from the incorrect use of potassium permanganate as a douching solution. Of the remaining 35,

only 15 women were actually pregnant, and 5 of them succeeded in aborting themselves; of course other agents may have been used in addition. Seventy-five per cent of the patients had been given a correct diagnosis before their admission; this fact speaks well for the routine speculum examination of women with vaginal bleeding. The chief characteristic of potassium permanganate ulcers in the vagina is bright red bleeding, usually of some hours' duration, with passage of large clots per vaginam; pain is exceptional unless abortion is actually occurring. The ulcers are deep, sharply demarcated, often irregularly shaped, with a brownish-black eschar covering the base or the surrounding mucosa. They are more often multiple than single. Treatment in this series of patients consisted of bed rest, packing, or suture, or a combination of these; antishock therapy was needed in 60% and analeptics in 12%. Some patients required an indwelling catheter because of proximity of the ulcer to the urethra. A number of complications can arise from the vaginal use of potassium permanganate, and they are occasionally fatal. The public should be informed that its use is not only harmful but ineffective.

An Analysis of 144 Cases of Postpartum Hemorrhage. W. Zok-Tsung. Chinese M. J. **72**:243-255 (July-Aug.) 1954 [Peking, China].

If blood loss exceeding 500 cc. during the third stage of labor and within the first 24 hours is regarded as postpartum hemorrhage, then during 1952, among 2,967 obstetric cases in a Shanghai clinic, there were 144 cases of postpartum hemorrhage, or an incidence of 4.85%. One hundred twenty-nine, or 4.34%, of the total number of women lost 500 to 1,000 cc. of blood; eight, or 0.26%, lost 1,000 to 1,500 cc.; three, or 0.1%, lost more than 1,500 cc. In four cases the quantity lost was uncertain. The author regards uterine atony as the most frequent cause. Grand multipara and those with placenta previa, premature separation of normally implanted placenta, multiple pregnancies, polyhydramnion, prolonged labor, and operative deliveries are more liable to have postpartum hemorrhage. Severe blood loss predisposes to postpartum infection. Adequate antenatal care, hospital delivery of all difficult cases, proper management of the second and third stages of labor, and proper management of abnormal labors are the most important preventive measures. Active treatment includes adequate replacement of blood loss, early detection of the cause of bleeding, early removal of retained placenta, proper repair of soft tissue injury, use of oxytocic drugs, uterine massage, intrauterine packing, uterine compression, compression of abdominal aorta, and, last of all, hysterectomy.

PEDIATRICS

Cerebromeningeal Hemorrhage in Newborn with Particular Reference to Early Diagnosis and Therapy. M. Uglietti. Minerva ginec. **6**:601-614 (Sept. 15) 1954 (In Italian) [Turin, Italy].

Uglietti reviews the etiology of cerebromeningeal hemorrhage in the newborn infant and discusses the early diagnosis and treatment on the basis of his experience with 36 infants in whom the lumbar puncture gave good results both as a diagnostic and a therapeutic means. These infants constituted 2.27% of all the living infants born at the maternity hospital of the Novara School of Obstetrics from January, 1950, to October, 1953. Fifteen of the 36 infants were delivered spontaneously, 19 instrumentally, and 2 by caesarian section; 33 were born at term, and 3 were premature. The fact that the same disturbances appeared in infants delivered spontaneously and in those delivered instrumentally seems to confirm the current hypothesis that dystocia is one, but not the only, cause of intracranial hemorrhage in the newborn infant. It is thus necessary to keep always in mind that any disturbance in the newborn infant may be caused by an intracranial hemorrhage that in many instances may be still latent. The commonest symptom, besides loss of weight, which induced Uglietti to perform a lumbar puncture in these infants was the sudden onset of fever and diarrhea when there were no alterations in the main organs and the blood, stool cultures, and pharyngeal swabs were normal. Vomiting and signs of hyperexcitability were present only in the severest cases. Three infants died. Fever disappeared in almost all the others 24 hours after the puncture was performed, and there were no immediate complications. All began to gain weight, and when they were dismissed their general condition was good. A follow-up indicated no sequelae in 23 children. A slight cerebropsychic disability was present in one; one had undergone surgery for hydrocephalus; two had died at the ages of 7 and 11 months, respectively, with a marked microcephaly; and one in whom this was present together with flaccid tetraplegia and lack of mental development was still living at the time of writing. Five children could not be reached. Because of the good results he obtained in these infants, Uglietti, unlike many other authors, feels that lumbar puncture should be undertaken in all infants in whom the presence of a cerebromeningeal disorder is suspected.

Febrile Eclampsia in Children: Its Frequency and Diagnosis. G. Friderichsen and J. Melchior. Ugeskr. læger **116**:1419-1423 (Oct. 7) 1954 (In Danish) [Copenhagen, Denmark].

Of 405 children with febrile eclampsia treated from 1938 through 1953, 82% had the first convulsion in the first three years of life, mostly at about 18 months of age. In 62% of the cases the fever was due to acute disease of the upper respiratory tract. In 12.3% of the cases the children were readmitted because of febrile convulsions. Information on 282 of the 372 children treated through 1952 shows that 193, or 68%, have been well. Eight, or 2.8%, have epilepsy. One or more convulsions occurred after discharge in 55 children, without diagnosis of epilepsy, although the observation time is up to 16 years; in a number there are deviations in development. The remaining 26 patients, none of whom had later convulsions, have had psychic difficulties in development. Seven criteria of value in differential diagnosis between febrile eclampsia and epilepsy are listed. 1. Observation for epilepsy is indicated if convulsions last more than 20 or 30 minutes. 2. Epilepsy is to be suspected if the spasms continue in spite of adequate treatment. 3. Focal spasms point to epilepsy. 4. Epilepsy is primarily to be considered if the patient is over 5 or 6 years of age at the first attack. 5. Observation for epilepsy is indicated on history of possible afebrile convulsions. 6. Known familial disposition to epilepsy points to the disease. 7. Electroencephalographic results afford perhaps the best criterion.

Report on the Use of Gamma Globulin and Adult Serum for Measles Prophylaxis in England and Wales, 1949-53 J. C. McDonald and W. C. Cockburn. Brit. M. J. **2**:1076-1079 (Nov. 6) 1954 [London, England].

During the period from Oct. 1, 1949, to Dec. 31, 1953, report forms sent to physicians for an inquiry into measles prophylaxis were returned for 82% of 12,408 doses of gamma globulin and for 67% of 3,931 doses of adult serum issued. Both the concentrated and the unconcentrated types of adult serum were used. The superiority of gamma globulin over adult serum in measles prophylaxis was established. The disease, though not invariably prevented by larger doses, was usually prevented or modified by relatively small doses of gamma globulin. Within limits the prophylactic effect of gamma globulin varied directly in proportion to the dose used and inversely with the age of the child inoculated and the length of time between exposure and inoculation. The effect of delay between exposure and inoculation was not apparent in children under one year of age and was only slight in children between 1 year and 3 years old. The use of gamma globulin for measles prophylaxis should be restricted to children with weak constitutions or actual illness, children living in bad home or institutional environments, and children in hospital wards in which cases of measles occur. It should be given to babies under 6 months of age only if their mothers have not had measles. The following dosage scale is recommended: (1) for prevention,

250 mg. for babies less than one year old, 500 mg. for those between the ages of 1 and 3, and 750 mg. for children over 3 years of age; (2) for attenuation, 250 mg. for all three groups. The value of adult serum as a prophylactic agent in measles is not sufficient to justify the running of the risk of serum hepatitis that its use entails.

A New Syndrome: Progressive Familial Infantile Cerebral Dysfunction Associated with An Unusual Urinary Substance. J. H. Menkes, P. L. Hurst and J. M. Craig. Pediatrics **14**:462-467 (Nov.) 1954 [Springfield, Ill.].

Four cases of a syndrome involving a rapidly progressive cerebral dysfunction and commencing during the first week of life are reported in one baby girl and three baby boys. At birth all four infants were large and healthy. They died within three months of the onset of their symptoms. In each of the patients the urine excreted had a peculiar odor resembling that of maple syrup. The initial signs of this condition consisted of difficulty in feeding, absence of a Moro reflex, and the development of irregular, jerky respirations. Later, generalized rigidity and opisthotonos were noted. Convulsions were not a prominent feature. Paralyses, hemiparesis, or nystagmus were not seen in any of the patients. The spinal fluid findings were not unusual for this age group. Subdural tabs were done in one patient and failed to reveal fluid. In the one patient in whom a pneumoencephalogram was performed, changes suggestive of diffuse cortical atrophy were observed. Studies to rule out syphilis and such metabolic abnormalities as hyperglycemia and tetany were performed in three patients, and results were negative. The urines, aside from their peculiar odor, were normal. Synthesis of artificial maple syrup involves a combination of a low molecular weight amino acid with various carbohydrates. That such a compound might represent a degenerative product of an abnormal cerebral metabolic process does not seem too unlikely. Some anomaly of cerebral metabolism may, therefore, be considered as the cause of the syndrome. Autopsies were performed in two cases, but the pathological changes noted were not specific or unusual.

ANESTHESIA

Chlorpromazine: A Study of Its Action on the Circulation in Man. C. A. Foster, E. J. O'Mullane, P. Gaskell and H. C. Churchill-Davidson. Lancet **2**:614-617 (Sept. 25) 1954 [London, England].

Chlorpromazine (10-[γ-dimethylaminopropyl]-2-chlorophenothiazine hydrochloride) in combination with meperidine (Pethidine) and promethazine has been used extensively in France and in Indochina as a method of reducing body metabolism and guarding against the development of shock. Some investigations suggested that the protective action against shock in man may be mainly due to the effect of chlorpromazine on the peripheral blood vessels and autonomic ganglia. In this paper Foster and associates describe studies that they undertook to determine the action of chlorpromazine on the circulation. To ascertain the action on the heart rate and blood pressure, studies were made on 10 conscious male volunteers and on 12 anesthetized patients. The action of chlorpromazine on the circulation in hand, forearm, and calf was also studied in the 10 conscious subjects. Chlorpromazine was found to have variable effects on the blood pressure and pulse rate, but it usually decreases the blood pressure and increases the pulse rate. It has a powerful vasodilator action on the vessels in the hand, forearm, and calf. Its vasodilator action on the hand is due to both central and local effects. Chlorpromazine reduces the response of the blood vessels in the hand to the cold-constrictor test. After chlorpromazine has been administered, arterenol (nor-epinephrine) has less pressor action and no longer causes bradycardia. Chlorpromazine reversed the action of epinephrine on the vessels of the hand. The use of arterenol rather than epinephrine is therefore recommended to restore the blood pressure in cases of excessive hypotension due to chlorpromazine.

PHYSIOLOGY

Investigation of Adrenocortical Function by Determination of the Urinary Steroids Before and After the Administration of ACTH by Intravenous Infusion. J. Decourt, M.-F. Jayle, J.-P. Michard and E. Baulieu. Presse méd. **62**:1383-1384 (Oct. 13) 1954 (In French) [Paris, France].

The authors practiced the determination of adrenal cortical function with corticotropin administered intravenously as described by Thorn and co-workers. They were able to establish criteria for a normal adrenal cortical response by the use of this method in healthy young men and women. Two elderly subjects and a number of children were also studied. The components determined were: (1) corticoids of the group 17-21-OH-20 CO as measured by the Porter-Silber reaction, (2) corticoids as measured after enzymatic hydrolysis by Gornall's reaction, and (3) the total 17-ketosteroids as measured by Zimmermann's reaction after acid hydrolysis. A number of patients with various diseases were subjected to the test; their illnesses included adrenal cortical hypofunction (Addison's disease), panhypopituitarism, adrenal cortical hyperfunction (Cushing's syndrome) and female virilism, hyperthyroidism, paraplegia, psychogenic amenorrhea, tuberculosis, cancer, and senile debility. This technique permits differential diagnosis between destructive lesions and functional incapacity of the endocrine tissues. Certain functional dissociations are also revealed by the procedure, which show, in the pathological state, a relative independence of production of the 19 and the 21 carbon atom steroids, that is, of the "androgen" and "metabolic" functions of the gland. There are numerous pathological conditions characterized by an insufficient production of adrenal steroids of C 19, with normal C 21 corticosteroid elaboration. On the other hand, there are others in which the gland is capable of reacting to corticotropin by an elective hypersecretion of the "androgen" adrenal steroids.

Nutritional Requirements in Cold Climates. K. Rodahl. J. Nutrition **53**:575-588 (Aug.) 1954 [Philadelphia].

Reliable data pertaining to the energy requirements on arctic journeys are of practical importance, because the rations constitute a significant proportion of the load. It has been suggested by several authors that the arctic calorie requirements would be of the order of 5,500 to 6,000 calories per man per day both for men engaged in field operations as well as for troops on garrison duties in the arctic or subarctic. During the two years 1950 to 1952, Rodahl carried out nutritional surveys for weekly periods during the four seasons of the year among groups of infantry soldiers and airmen on garrison duties at Ladd Air Force Base, Alaska, and in Eskimos from four different locations in Alaska. Individual studies showed an average daily calorie consumption per man of 3,000 in the air force group and 3,200 in the infantry group. The average calorie expenditure for the four seasons was estimated to be about 2,800 calories per man per day. Under these conditions no appreciable weight change occurred, and the subjects remained in excellent health. It is concluded that the calorie requirements of the average man engaged in activities of similar magnitude and under similar climatic conditions as those of the subjects studied would be in the order of about 3,000 to 3,500 calories per man per day at any season of the year. In adult male Eskimos at four different locations in Alaska, an average daily consumption of about 3,100 calories was sufficient to maintain the body weight, with an estimated daily energy expenditure of roughly 2,700 calories throughout the year. These findings are in agreement with previous findings among Eskimos and trappers in Greenland. The percentage of calories furnished by protein, fat, and carbohydrate to the United States troops living in Alaska is not significantly different from that reported for United States troops eating a garrison ration in temperate or tropic climates. In the Air Force group, however, there was an increased consumption of fat in the winter. The consumption of minerals was higher than the recommended allowances for temperate climates. There was no evidence that human vitamin requirements are significantly higher in arctic or subarctic environments than in temperate climates. Arctic travelers, trappers, and Eskimos may subsist on ascorbic acid intake of less than 15 mg. daily without showing clinical evidence of vitamin C deficiency.

BOOK REVIEWS

The Clinical Use of Corticotropin, Cortisone and Hydrocortisone in Eye Disease. By Dan M. Gordon, M.D., F.A.C.S., Assistant Professor, Department of Surgery (Ophthalmology), New York Hospital—Cornell Medical Center, New York. Presented, in part, at Fourth Pan-American Congress of Ophthalmology, Mexico City, D.F. Publication number 162, American Lecture Series, monograph in American Lectures in Surgery. Edited by Michael E. De Bakey, M.D., Professor of Surgery and Chairman, Department of Surgery, Baylor University College of Medicine, Houston, Tex., and R. Glen Spurling, M.D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. Ophthalmology Division, editor: Donald J. Lyle, M.D., F.A.C.S., Professor of Ophthalmology, University of Cincinnati, College of Medicine, Cincinnati, Ohio. Cloth. $3.75. Pp. 88, with 21 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1954.

This excellent monograph presents the concept of hormonal-steroid therapy concisely, clearly, and simply and serves as an aid to the clinical ophthalmologist. The author points out that if the inflammatory disease does not exhibit definite evidence of beneficial response within 48 to 72 hours after the institution of local cortisone treatment, systemic treatment should be started. If, after a similar period of systemic treatment, no response has been secured, then one must either increase the dose or switch to the alternate hormone. The general rules and guides as to dosage are clearly brought out under a dosage table for corticotropin (ACTH), cortisone, and hydrocortisone, applied locally and subconjunctivally and injected intramuscularly and intravenously. A clear concept is inculcated into the reader: these drugs are not to be used indiscriminately or haphazardly, but treatment should follow a prescribed dosage schedule and should be altered or changed only when there are definite indications of inadequate or ineffective dosage. The book is replete with excellent photographs of eyes, before and after treatment, and reports of specific cases. The paper is of a fine quality, and the print is large, clear, and easily readable. Every clinician who is interested in hormonal-steroid therapy should have this book in his library.

Blood Groups in Man. By R. R. Race, Ph.D., M.R.C.S., F.R.S., Director, Medical Research Council Blood Group Research Unit, Lister Institute, London, England, and Ruth Sanger, Ph.D., B.Sc. With foreword by Professor Sir Ronald Fisher, F.R.S. Second edition. Cloth. $7.50. Pp. 400, with 31 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1954.

Workers in the field of blood grouping who are already familiar with this book have been looking forward to the appearance of the second edition. In the four years that have passed since the first edition appeared, there have been numerous advances in the field, all of which have been incorporated in the second edition, which has increased in size from 290 to 400 pages. Thus the book maintains its position as a valuable reference source to current work in the blood-grouping field. Critical readers will be disappointed, in that hardly any of the faults of the first edition have been corrected. The presentation of the subject remains biased and parochial and largely disregards the investigations of a second important group of workers who have a different interpretation of the serologic and genetic findings. As a result of the existence of these two schools two different nomenclatures for the Rh-Hr system are in use. Since the two nomenclatures interpret and present the same observations differently they cannot both be correct. The scientific investigator will wish to study both sides of the question, and, since this book by Race and Sanger presents only one viewpoint, it cannot be recommended as an introduction to the subject. If the beginner is to use this book at all, he should at the same time study other treatises on the subject that have appeared this year presenting the opposite viewpoint, and then draw his own conclusions when all the facts are available to him. Many statements in this book are misleading, as is shown by the large number of articles that have appeared containing misstatements, misquotations, and errors for which this book has been directly or indirectly responsible.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

Lehrbuch der Parasitologie unter besonderer Berücksichtigung der Parasiten des Menschen. Von Dr. Gerhard Piekarski, apl. Professor der med. Parasitologie und Mikrobiologie der Universität Bonn. Cloth. 108 marks. Pp. 760, with 411 illustrations. Springer-Verlag, Reichpietschufer 20, (1) Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, Germany, 1954.

Students of medical parasitology have awaited with interest the publication of this volume, the first new comprehensive German text on the subject for nearly a half century. The author has attempted to develop "a synthesis between biological and medical interests in parasitology," rather than to furnish encyclopedic information in protozoology, helminthology, or entomology, subjects that have been included by other workers in more pretentious systems of zoology and medicine. The book emphasizes host-parasite relationships and the life cycles of the parasites to provide a better understanding of the pathological picture and the methods of propagation of the parasites. It is divided into sections on general and specialized parasitology. In the first part terms are briefly defined, the importance of the subject in German economy is presented, host-parasite relationship is discussed in general terms, and a concluding topic on man and his parasites is given. The specialized section takes up groups of parasites according to their taxonomic classification, viz., protozoa, helminths, and arthropods. Each group is first considered as a whole, then the more important parasites of man and their relatives are described in detail. Since the text is intended primarily for German zoologists and physicians, special attention is given to parasites of medical and economic importance in Germany, such as Toxoplasma, Fasciola hepatica, Dicrocoelium dendriticum, Opisthorchis felineus, Diphyllobothrium latum, Ascaris, and Enterobius.

The author uses the German name "E. hartmanni" (page 136) for the allegedly apathogenic histolytic-like ameba and states that this differentiation is made strictly on a physiological basis. Both zoologists and physicians should profit from the consideration of Toxoplasma pseudocysts. Colored illustrations of thin and thick blood films of the malaria parasites of man are particularly satisfactory. Throughout the book there is evidence of great care to develop the zoological background as a basis for interpreting the phenomenon of parasitism, both from a comparative and a medical standpoint. Many of the illustrations are borrowed from publications of other students of parasitology, but a fair number of the best drawings are original. Numerous diagrams and tables help the reader to correlate detailed textual descriptions. All of these add to the usefulness of the volume. There are abundant references to the literature and good author and subject indexes. The book is beautifully printed, has few typographical errors, and is substantially bound in cloth. Undoubtedly it will be accepted as an authoritative contribution to German parasitology and would be a desirable reference book in the United States were it not for the price, which places it in the category of a luxury item.

Electrometric pH Determinations: Theory and Practice. By Roger G. Bates, Ph.D., Chemist, National Bureau of Standards. Cloth. $7.50. Pp. 331, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, England, 1954.

The objectives of this book are to present the theoretical and experimental basis for a practical electrometric scale of acidity and to compare the various possible scales with respect to their validity and usefulness. Thus this book offers a survey of almost every aspect of pH. It considers such topics as the assumptions on which the estimation of liquid-junction potentials and individual ionic activities can be based and their application in the establishment of pH standards. It indicates how far the exact thermodynamic approach can be pursued before empirical stand-

ardization begins. The properties of buffer solutions and the selection of mixtures for pH control are discussed. The first six chapters of the book describe in detail the theoretical aspect of pH. Included in these chapters are fundamental principles and conventions, definitions of pH scales, liquid-junction potentials and ionic activities, establishment of pH standards, buffer solutions, and quantitative aspects of acidity and basicity in nonaqueous solutions. The last four chapters of the book deal with the practical experimental work associated with methods and equipment. Such topics as cells, electrodes, techniques, properties of glass electrodes, measurement of electromotive force by various pH meters, and automatic pH control are discussed. The book serves as a good reference for the theoretical as well as the practical aspects of pH.

Smoking and Cancer: A Doctor's Report. By Alton Ochsner, M.D. Halfcloth. $2. Pp. 86, with illustrations. Julian Messner, Inc., 8 W. 40th St., New York 18, 1954.

The thesis of this highly charged little book on smoking and cancer is that "man is the only animal that pollutes his bodily structure by smoking, and nature is teaching him a merciless lesson." According to Ochsner about 25,000 Americans will die from lung cancer in 1955, and in 95% of these smoking will be a contributing cause. Moreover, "a man of fifty who has smoked a pack of cigarettes a day for twenty years has fifty times more chance of contracting lung cancer than a non-smoker." It is maintained, for instance, that sufficient proof has been accumulated to dispel medical skepticism regarding the association of excessive smoking with cancer, cardiovascular disease, and respiratory diseases. To combat these relationships, the author proposes that tobacco be placed under the same kind of federal regulations that now protect consumers of alcoholic beverages and drugs and that the cigarette industry should support efforts to have this done. Whether most physicians would go along with all of Ochsner's conclusions and recommendations is open to doubt. Nevertheless, the data submitted by the author to substantiate his case against smoking cannot be dismissed lightly by physicians who are unwilling or unable to give up smoking. Regardless of how they may feel about smoking and health, this is the type of book that will not serve as a soporific bedside reading companion. It is well worth every physician's reading time.

The Management of Endocrine Disorders of Menstruation and Fertility. By Georgeanna Seegar Jones, M.D., Assistant Professor of Gynecology, Johns Hopkins University, Baltimore. Publication number 206, American Lecture Series, monograph in Bannerstone Division of American Lectures in Endocrinology. Edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Cloth. $5.75. Pp. 198, with 37 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1954.

This book reviews briefly the physiology of menstruation and fertility, the disturbances in these functions encountered in clinical practice, and their treatment. The first half of the book is devoted to a consideration of the pituitary, chorionic, and ovarian hormones; menarche; menopause; and normal menstruation. The remainder is devoted to functional menstrual disorders, such as oligomenorrhea, amenorrhea, infertility, habitual abortion, hydatidiform mole, and choriocarcinoma. An extensive bibliography including author and subject indexes completes the volume. The presentation follows, in general, that of the usual textbook of endocrinology and conforms with modern concepts in this field. The typography and format are excellent, as are also the few photomicrographs of tissues; the charts, on the other hand, are poorly drawn. The most serious defect of the book is the author's stilted and obscure style, illustrated in the following sentences: "One of the basic influences which determines how any endocrine gland may act, or indeed any substitute therapy, is the diet. As classically illustrated in the case of diabetes, no amount of insulin replacement therapy will avail unless the diet is such that the patient can adopt a secondary type of carbohydrate metabolic mechanism." Such obscurity unfortunately mars what might otherwise have been a sound presentation by a well-qualified worker of a subject important to the general practitioner as well as the gynecologist.

A Ciba Foundation Symposium: Preservation and Transplantation of Normal Tissues. Editors for Ciba Foundation: G. E. W. Wolstenholme, O.B.E., M.A., M.B., and Margaret P. Cameron, M.A., A.B.L.S. Assisted by Joan Etherington. Cloth. $6. Pp. 236, with 55 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6, 1954.

The papers in this symposium were written by leaders in such diverse fields as biology, biophysics, surgery, pathology, immunology, blood transfusion, tissue culture, reproductive physiology, and ophthalmology. Longmire classifies grafts as homostatic (inert tissues, such as bone or cartilage transplanted from one person to another) and homovital (grafts, the cells of which must continue to grow and reproduce for the graft to be effective). Seventeen separate papers are presented, each followed by a discussion. Recent references are included in a bibliography at the end of each paper. Several of the papers are illustrated with black and white photographs and some with photomicrographs. The photographs in general are of good quality, and the diagrams are clear and concise. Treatment of the theoretical and practical aspects of the subject are well balanced, and the book points out not only techniques that are useful and practical but also techniques that have thus far proved fruitless. The practical techniques find application especially in general surgery, eye surgery, human endocrinology, fertility, and stock-breeding. The techniques of storing tissues for transplantation are discussed fully and critically. The important practical subject matter can be summarized in three groups: 1. The use of homostatic grafts has a definite place in moderate surgery. 2. The necessity and viability of these grafts is open to serious question. 3. Some progress has been achieved with homovital grafts, but useful techniques are few and, in some cases, viability seems to be actually undesirable. This book should be most useful to those doing basic research on transplants and to those in various fields of surgery in which transplantation techniques are of practical importance.

Color Atlas of Pathology. [Vol. II]: Endocrine System, Including Pituitary, Thyroid, Parathyroid, Adrenals and Pancreas; Gynecology and Obstetrics, Including Reproductive Organs; Breasts; Male Genital Tract; Skin. Prepared under auspices of U. S. Naval Medical School of National Naval Medical Center, Bethesda, Md. Cloth. $20. Pp. 450, with 1032 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada; British agent—Sir Isaac Pitman & Sons, Ltd., 39 Parker St., London, W.C.2, England, 1954.

Four years ago the United States Naval Medical School published the first volume of this atlas. Now the second volume has been published with the same beautiful format and general arrangement. The two volumes are so similar in external appearance that the only distinguishing mark is the one star on the cover of volume 1 and the two stars on the cover and backbone of volume 2. The first volume apparently carries no date. Volume 2 fortunately has 1954 on one of the introductory pages. In the foreword, Surgeon General Rear Admiral Lamont Pugh gives credit to the numerous persons whose loyalty, intellect, skill, and energy made possible this volume—the commanding officers of the Naval Medical School, the directors of laboratories, the pathologists at the Naval Medical School, the photographers, the lithographers, the artists, the pressmen, the platemaker, the Armed Forces Institute of Pathology, Georgetown University Medical School, the Naval Medical School, and several other persons. As in the first volume the guiding spirit was Dr. Charles F. Geschickter, professor of pathology, Georgetown University Medical School and consultant in pathology to the United States Naval Medical School. The essential difference between this volume and volume 1 is the subject matter, which has to do with diseases of the endocrine system, gynecologic and obstetric pathology, diseases of the breast, diseases of the male genital tract, and diseases of the skin. The colored illustrations have been selected with such excellent care and judgment and printed so beautifully it would appear that students of pathology need look no further especially for stained microscopic sections of the pathological conditions reviewed in this atlas. There are also brief but very pertinent descriptions of both the normal and the pathological tissues illustrated, as well as an extensive index. The third and final volume of this system of pathology is currently being compiled.

A History of Medicine. Volumes I and II. By Ralph H. Major, M.D., Professor of Medicine and of History of Medicine, University of Kansas, School of Medicine, Kansas City. Cloth. $14.50. Pp. 563; 565-1155, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1954.

The expressed intent of the author has been to write a history of medicine primarily for the medical student and the medical practitioner in order "to interest them more in the history of their own profession, which, despite attacks and abuse, despite quacks and charlatans, and in spite of its own mistakes, has proved itself more enduring than any of the civilizations which gave birth to it." In this two volume history, the author has succeeded admirably in tracing the healing art from prehistoric to current times. The text is profusely illustrated and is supplemented by biographic material at the end of each chapter. A medical canard proclaims that medical history should be reserved only for septuagenarians and octogenarians. This work should effectively put the proclamation to rest, for it is vital, vigorous, and engaging, and the reader is assured of many delightful hours of reading.

9 Doctors & God. By Francis John Halford, M.D. Cloth. $4. Pp. 322, with 54 illustrations by Keichi Kimura, University of Hawaii Press, Honolulu 14, Hawaii, 1954.

"Before the missionaries came" is an expression that tourists frequently hear when they visit the Hawaiian Islands. It seems to mark some remote event in the history of the islands and to represent the end of an old era and the beginning of a new one. The coming of the missionaries to the Hawaiian Islands is the subject of this book, which is concerned chiefly with the nine doctors who came with the missionaries. It covers a period of 78 years that lay between the arrival of the first missionary physician, Dr. Thomas Holman in 1820, to the death of the last one, Dr. Charles Wetmore in 1898. The missionaries, along with the doctors, were sent to the islands from time to time in small companies by the American Board of Commissioners for Foreign Missions. Before their coming the healing of the sick was in the hands of *kahunas,* a name sometimes connected with sorcery and evil spirits. Even so, as Dr. Nils P. Larsen points out in the foreword of this book, the *kahunas* had some healing methods and ideas about disease that in the light of today's knowledge were superior to those of the missionary doctors. Their methods suggested the well-known fact that the bedside approach and confidence of the patient is sometimes more effective than the contents of the doctor's bag. While the missionaries came to a paradise from the standpoint of climate and of a race described by Captain Cook, the navigator, as one of the finest on earth, their many years in these islands were filled with hardships that shortened the lives of some of them. To reach the islands from Boston was in itself a hardship. They sailed around the Horn in small sailing vessels and spent as many as 164 days on the ocean. In trying to care for the sick they often traveled many miles by canoe from one island to another. They were carried in a sort of improvised chair by the natives, or they may have walked great distances over stony lava beds or through the jungle. They sometimes had to build their own homes and offices with supplies that were wholly inadequate.

Before Captain Cook's arrival in Hawaii in 1778, apparently there had been comparatively little disease as it is known today among the natives. They had no immunity whatever to the infectious diseases that were brought in by the sailors in the various expeditions that had landed between Cook's expedition and the coming of the missionary doctors. Captain Cook estimated that in 1778 there were 300,000 native Hawaiians, but by 1896, according to Dr. Larsen, only 31,000 were left; and so "an intelligent, stone-implement people which had flourished for centuries in an island paradise had been decimated by the sudden impact of western civilization with all its immoral and disease-conveying overtones." A chapter in this book is devoted to each of the nine missionary doctors, some of whom were also ministers of the gospel. There are numerous quotations from letters from them and from their families in the United States. These letters reveal not only their joy in doing all they could to "civilize" and christianize the Hawaiians but also their many requests for more help and more supplies to carry on this work. The stories are beautifully related to the details of life in Hawaii. There are seven appendixes, including a chronology of medical events in Hawaii between 1778 and 1889, a glossary of Hawaiian words, and an extensive bibliography apparently used by the author in his 15 years of research into the old records.

Clinical Aspects of the Autonomic Nervous System. By L. A. Gillilan, Ph.D., M.D., Associate Professor of Anatomy, Graduate School of Medicine, University of Pennsylvania, Philadelphia. Cloth. $6.50. Pp. 316, with 42 illustrations by author. Little, Brown & Company, 34 Beacon St., Boston 6, 1954.

Although the anatomy of the autonomic nervous system has been well known since the classic description of Langley in 1893, an understanding of its function in relation to disease is of more recent origin. Uniting the central nervous system, particularly the corticohypothalamic centers, with the viscera, the linking nerves establish a unit of activity that forms the basis for the modern concept of psychosomatic medicine. Recent stimulus to explore its physiological action came as the result of investigations on hypertension by Peet in 1935. The development of the concept of neurohumoral transmission of the nerve impules by Dale and Loewi and the growth of the pharmacological approach to the study of autonomic function, with the resultant host of pharmaceutical products, cholinergic and adrenergic in action, occurred independently. To understand these developments and the principles of autonomic medicine, the author has assembled the pertinent anatomic and clinical data into a readable factual book, designed to give the clinician an adequate background. He has fully accomplished this goal, for this book, clear, concise, and well illustrated by the author's drawing, is an effective correlation and arrangement of the known facts regarding the implications of the autonomic nervous system as applied to cardiac, respiratory, digestive, and urogenital disease. In addition, the author has brought to the attention of English readers the important foreign contributions. Up-to-date, provocative in suggestions for further experimental studies, finely printed, with full index and list of references, this book deserves the highest recommendation. All clinicians should find material here that can be and should be applied in daily practice.

Manual of Proctology. By Emil Granet, M.D., Surgeon (Proctology), French Hospital, New York. Cloth. $7.50. Pp. 346, with 119 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1954.

This excellent manual, which the author has designed to be useful to the general practitioner, has accomplished its purpose well. The author has omitted detailed discussions of many controversial subjects in order to furnish a concise description of all the more common entities encountered in proctology. Judicious use of both graphic and photographic illustrations clarifies the text and adequately illustrates the methods of diagnosis and treatment that are described. The discussion of malignant tumors deliberately has been limited to the essentials of diagnosis and a summary of results of treatment. This manual should make an excellent addition to the library of any general practitioner who is interested in the study of anorectal pathology.

Treatment of Acute Poliomyelitis. Edited by William A. Spencer, M.D. In cooperation with National Foundation for Infantile Paralysis, Inc. Second edition. Paper, loose-leaf. $3.75. Pp. 134, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1954.

The editor of this volume has been joined by 22 contributors in condensing the literature on the current treatment of acute poliomyelitis. After a consideration of signs and symptoms is presented, extensive data regarding respiratory factors are given in a condensed form. The value of the respirator and the therapy of pulmonary complications are outlined. The social and psychological aspects of poliomyelitis are not neglected. The condensation of various forms of treatment make this book difficult to follow. It might be well to include a chapter on the lesions of poliomyelitis and a discussion of the normal courses of the disease toward improvement and recovery in the next edition. Such a chapter would give a proper perspective of the relationship of therapeutic measures to the recovery from poliomyelitis.

QUERIES AND MINOR NOTES

EMERGENCY DISINFECTION OF DRINKING WATER

TO THE EDITOR:—*In some of the larger cities in Europe, tourists have been advised not to drink the tap water. Is there a simple way in which this water can be made reasonably safe, aside from boiling?* *E. A. Fry, M.D., Columbus, Ohio.*

ANSWER.—In the emergency disinfection of small quantities of water from sources suspected to be unsafe, one of the following procedures may be used: 1. Chlorine, which is commercially available as household bleach in 3 to 5% concentration, may be used. In this method, 2 drops of the chlorine solution are added to each quart (about 0.95 liter) of water to be disinfected. The solution is stirred well and allowed to stand at room temperature for a minimum of 30 minutes. 2. Two halazone tablets, which are available through most retail drug outlets, may be added to each quart of water, thoroughly stirred, and allowed to stand for a minimum of 30 minutes before drinking. 3. Iodine has long been recognized as a sure and safe agent for disinfecting water in small quantities. A special iodine preparation called "Globalin," which is available commercially in tablet or ampul form and is designed specifically for the disinfection of drinking water in small quantities, may be used. If this preparation is not available, standard tincture of iodine U. S. P. may be used. Two to 3 drops of the tincture solution should be added per quart of water, thoroughly stirred, and allowed to stand a minimum of 30 minutes. In all of the above methods, should the untreated water appear to be highly turbid or to have abnormal coloration, it is recommended that the dosage be doubled. Objectionable chlorine taste or odor may later be removed through a simple process of aeration, by pouring the water from container to container and allowing it to stand. It is advisable for the traveler to procure supplies of water-treatment chemicals in the United States prior to foreign travel, inasmuch as items commercially available in the United States may not be available in all foreign countries visited. If none of the aforementioned chemicals are available for water treatment, the traveler should boil suspected water in a clean container for at least five minutes.

BORIC ACID IN CORN CANNING RECIPE

TO THE EDITOR:—*Following is a recipe for canning corn that has been used in this community for generations. Is there a potential danger from eating food that has been canned with boric acid by this method?*

RECIPE FOR CANNING SWEET CORN

8 cups sweet corn cut from cob
1 tablespoon salt
2 tablespoons powdered boric acid
3 tablespoons sugar
Use enough water to cover the corn. Boil 20 minutes. Put in jars and seal.

F. C. Anderson, M.D., Owatonna, Minn.

ANSWER.—Yes, there is a potential danger. "From the numerous case histories reported it appears that the fatal dose of boric acid in an adult is somewhat more than 15 to 20 gm., in an infant 5 to 6 gm." (Pfeiffer, Hallman, and Gersh: *J. A. M. A.* **128:**266 [May 26] 1945.) The 2 qt. in the recipe would contain about 31 gm. of boric acid. While the evidence for cumulative action is not incontrovertible, Pfeiffer reports, many isolated observations indicate that boric acid is definitely a cumulative poison. Consequently, the danger of the use of boric acid, though remote under ordinary circumstances, is present and real. As a preservative, which is presumably its purpose in this recipe, it is relatively feeble, inhibiting the growth of bacteria but not killing them (Grollman, A.: Pharmacology and Therapeutics, ed. 2, Philadelphia, Lea & Febiger, 1954). In view of its poor qualities as a preservative and the accompanying danger of ingesting doses that might prove toxic or even fatal, either immediately or over a period of time, it is suggested that some other method of preservation, such as the use of pressure-cooking utensils, be used in the canning.

MULTIPLE JOINT PAIN AND SWELLING

TO THE EDITOR:—*A 17-year-old, tall, very thin boy was apparently well until he stumbled two months ago, after which pain and swelling developed in the left ankle. This was assumed to be a sprain. Within a month, pain and swelling appeared in the other ankle, the left knee, and the right shoulder. A painless, soft swelling was near the left elbow, and the right wrist was painful without swelling. There has never been erythema or local warmth, and usually one joint is more painful than the others at any one time. The patient also remembered mild pain in the lumbar area on arising for six months. There has been no tachycardia or fever and no other symptoms. A paternal aunt has rheumatoid arthritis. Findings on physical examination were bilateral severe hyperopia, underweight, dental caries, thoracic scoliosis present for years, and the manifestations at the joints, the swelling of which was due to effusion rather than to periarticular edema. Blood pressure was 122/74 mm. Hg, and pulse was 96 beats per minute. X-ray examination of the chest, left ankle, right wrist, and lumbosacral spine, including sacroiliac joints, was normal. The electrocardiogram was normal. Blood studies showed hemoglobin level, 10.9 gm. per 100 cc.; erythrocyte count, 4,040,000 per cubic milliliter; mean corpuscular hemoglobin, 27 micromicrograms; leukocyte count, 7,000 per cubic milliliter, with 62% polymorphonuclears, 26% lymphocytes, 7% monocytes, and 5% eosinophils; packed cell volume, 37% (corrected to 34%); sedimentation rate, 54 mm. per hour; albumin level, 4.2 cc. per 100 cc.; globulin level, 2.4 cc. per 100 cc.; and antistreptolysin titer, 12 Todd units. One urine specimen contained 3 to 5 erythrocytes per high-power field, but the others were entirely normal. Salicylates are only moderately effective in relieving the pain. Please comment on diagnosis and treatment.* *M.D., California.*

ANSWER.—Multiple joint pain and swelling usually means that some form of arthritis is present. The shifting of pain and swelling from joint to joint in a 17-year-old boy, in the absence of fever or tachycardia, with a normal electrocardiogram but an elevated erythrocyte sedimentation rate, and with no marked response to salicylates, is suggestive of rheumatoid arthritis. Tuberculous arthritis should be considered, although it is nearly always monarticular. Animal inoculation with synovial fluid might be of help in ruling out this possible diagnosis. Gonorrheal arthritis must be ruled out. However, in the absence of a history of genitourinary infection this diagnosis is not likely. The possibility of acute, subacute, or recurrent rheumatic fever must not be overlooked, but the facts that this patient did not respond to salicylates and that new joints became involved as the illness progressed lend support to the diagnosis of rheumatoid arthritis.

Since the etiology of rheumatoid arthritis is unknown, the treatment remains empirical. The treatment should have for its purpose the arrest of the activity of the disease, the relief of pain, and the prevention of deformities. The remission of the disease may be achieved with either cortisone or gold salts. Cortisone should be given in doses sufficient to control, at least in part, the symptoms of the disease and continued in doses of 25 to 50 mg. The hormone should be discontinued gradually when there is marked improvement, when no further benefit is obtained, or in the presence of side-effects. If cortisone should prove of no benefit, gold should be tried. It should be administered in doses of 25 mg. intramuscularly, at weekly intervals, for a period of six months. If no favorable response is obtained

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it should be discontinued. The patient can be made comfortable with salicylates alone or in combination with small amounts of codeine. The degree of rest to be instituted would depend on the extent of involvement of the ankles and knee. Heat, moist or dry, whichever is most comforting to the patient, should be applied two or three times daily. Flexion deformity of the knee should be guarded against.

MILK ALLERGY

To the Editor:—*Please comment on the remark frequently heard: "I can't drink milk; it gives me so much mucus." Does allergy to milk cause, in addition to bloating, an increased postnasal discharge?* *M.D., Oregon.*

Answer.—When a patient attributes mucus to milk, allergy to milk often is responsible. Confirmation of milk allergy requires control of symptoms by the complete elimination of milk, including traces, as in butter or bread. Relief may be evident in 2 to 4 days, although 14 or more days may be required. A longer period may be necessary for complete relief of chronic bronchial or nasal allergy, atopic dermatitis, chronic gastrointestinal allergy, or cerebral allergy.

Such information about possible allergy to foods makes a diet history an important routine in the histories of all patients. Even when allergy is not suspected, a positive history may be an important clue. In obtaining such a diet history, all possible manifestations in various body tissues must be in the physician's mind. Suggested allergy usually is not indicated by positive skin tests and must be confirmed by reproduction of symptoms by the patient's eating the food when symptom free. Allergy to other foods in varying degrees, with or without milk allergy, usually exists in the food-sensitive person. Thus failure to relieve possibly allergic symptoms, such as mucus in this patient, with the entire elimination of one food, such as milk alone, does not rule out milk allergy. To study possibly multiple food allergies, trial diets, such as the elimination diets (Rowe), usually must be used. At times a test-negative diet is effective. Because of the fallibility of the skin test in food allergy, however, test-negative diets seldom reveal and control food allergies. Sole or continued reliance on them, unfortunately, is retarding the due recognition of food allergy today.

Along with food allergy, inhalant allergy, of approximately equal importance, must always be kept in mind. In this patient, however, inhalant allergy is unlikely, especially if itching of the nose and throat is absent and the skin reaction to inhalants negative. The presence of nasal polyps at the present time or in the future, if chronic nasal allergy continues, would favor food allergy. Moreover, postnasal discharge, with or without recent sore throats, is usually due to allergy, especially to foods.

TONSILLECTOMIES

To the Editor:—*In an article, "Absence of Tonsils as a Factor in the Development of Bulbar Poliomyelitis," in* The Journal *of July 24, 1954, page 1123, is following statement: "It has been suggested that those who had had tonsillectomy might be from a higher economic level in that their families had the financial resources with which to provide for tonsil removal. . . ." My impression has been the opposite: hypertrophic tonsils in lower economic levels, as suggested by vitamin B-deficient diets. Is there any statistical study on the relation of diseased tonsils to tonsillectomy? Has the use of antibiotic drugs altered the accepted indications for tonsillectomy? Is not the initial quotation about financial resources painfully true?* *M.D., California.*

Answer.—The surgical schedules of tonsillectomies in institutions providing free care do not support the contention that the procedure is more frequent in families that are in higher income brackets. In spite of the frequency of the tonsil and adenoid procedure, the indication presented by "financial resources" does not generally hold true. What is more pertinent is the fact that the procedure is still the easiest operation to do poorly and that the morbidity, if not the mortality, takes it out of the "prophylactic ritual" class. The nutritional and hygienic status influences the general health of patients and indirectly affects the lymphoid structures of the body, especially Waldeyer's tonsillar ring. Since virulent organisms are found in tonsils soon after birth, almost all tonsils should be considered diseased. The antibacterial drugs have influenced favorably the secondary infections and complications that formerly resulted from acute tonsillitis. Their effect in preventing the development of recurrent attacks of tonsillitis itself is doubtful. As a matter of fact, wanton antibiotic waste, bacterial resistance, organismal dependence, stimulating effects on the organism, encouragement of new forms of bacteria, and errors of diagnosis have resulted from such promiscuity. The beneficial effects of the operative procedure have not been altered provided that the indications are carefully considered and that the operation is properly performed by those with special training and experience.

THROBBING IN THE EAR

To the Editor:—*A man, aged 27, complains of a throbbing in the left ear synchronous with the cardiac systole that has been present since last April, following a severe head cold. Neurotic symptoms developed, and a physician told him he had hypertension, which worried him further. His systolic blood pressure varies from 160 to 175 mm. Hg, but the diastolic pressure remains normal. As a result of neurosis and anorexia, he was steadily losing weight. Under hospitalization, his weight has improved. Repeated counts show a total of 14,000 to 17,500 white blood cells per cubic millimeter with polymorphonuclears ranging from 70% to 80% but with no evidence of any localized infection. The tympanum was normal, but paracentesis was done for the psychological effect, with no improvement. A mixture of iodine, potassium iodide, and glycerine has been applied daily to the opening of the eustachian tube and inflation done, resulting in some slight improvement. Could his complaint be due solely to residual inflammation of the eustachian tube, or is some other organic condition in the region of the internal ear possible?*

Malcolm L. Raymond, M.D., Johnstown, Pa.

Answer.—A throbbing tinnitus synchronous with the pulse may be due to increased vascularity in the middle ear or labyrinthine capsule, as in an acute inflammatory process of the middle ear or an otosclerosis of the labyrinthine capsule. It is particularly common in the glomus jugulare type of tumor of the middle ear, which is visible as a localized, reddened mass behind the tympanic membrane. It is also an important symptom of an aneurysm of the circle of Willis, in which case a pulsating bruit is audible with the stethoscope placed over the ear. It occasionally occurs in hypertension simply owing to the increased force of the arterial pulse passing so close to the cochlea. Considering the proximity of the internal carotid artery to the cochlea where it turns medially to join the circle of Willis, it is surprising that a throbbing synchronous with the pulse is not commoner. It is rarely seen in eustachian tube occlusion, and it is doubtful that in the case cited any treatment to the tube will be of benefit. Tinnitus is an extremely common complaint, and in most instances there is no effective medical treatment. It is most important that these patients be reassured that the tinnitus does not have serious significance and that thousands of patients have become accustomed to a similar subjective sound, just as a person may become accustomed to other minor physical abnormalities.

CHLORDANE

To the Editor:—*What toxic reactions may result from the use of chlordane?* *J. J. Horton, M.D., Buda, Texas.*

Answer.—The general symptoms of acute chlordane poisoning resulting from irritation to the central nervous system are hyperexcitability, tremors, lack of muscular coordination, and, finally, convulsions. Convulsions are frequently sudden and may not be preceded by tremors. Periods of depression follow those of stimulation, and death follows a deep depression. Partial to total blindness has occurred in experimental animals. A fatal single dose to man appears to lie between 6 and 60 gm. The chronic intake of chlordane causes the usual degenerative changes produced by chlorinated hydrocarbons. The liver bears the brunt of the poisoning, and its damage is correlated with dosage and duration of administration. Histological damage to

a lesser degree may occur in the kidney, spleen, central nervous system, and heart. Local effects are those of a moderate irritant to the skin. This property is lost on dilution, as in any insecticidal preparation. Chlordane is absorbed through the skin, and it is estimated that daily exposure to about 2 gm. in solution may be dangerous to man.

TRICHINOSIS AFFECTING BONES

To the Editor:—*Have bone lesions been reported caused by either direct involvement with trichinas or trichinosis in nearby soft tissues?* *M.D., Pennsylvania.*

Answer.—Though trichinosis may or may not have been reported specifically in bones, it undoubtedly can and does occur there, as it can anywhere in the body (MacCallum, W. G.: Textbook of Pathology, ed. 6, Philadelphia, W. B. Saunders Company, 1936, p. 848). This, however, would be due not to direct extension from nearby soft tissues but to transmission in the capillaries, the reaction being due to the larvae dying in the capillaries of the tissue involved. Also found in lymph and cerebrospinal fluid, they survive chiefly or entirely in the tissues of voluntary muscle (and myocardium?). For details consult a modern textbook, such as "Pathology of Tropical Diseases" by Ash and Spitz (Philadelphia, W. B. Saunders Company, 1945).

WEIGHT INCREASE IN THYROTOXICOSIS

To the Editor:—*Kindly tell me the significance of weight increase in patients supposedly suffering from thyrotoxicosis (not edematous).*

Edward Dengrove, M.D., Asbury Park, N. J.

Answer.—In the absence of edema, either overt or latent, the weight increase must represent positive caloric balance. Not infrequently, a patient with thyrotoxicosis has such a voracious appetite that, despite a markedly elevated metabolic rate, he does not lose weight. It is less common, but not rare, to find a patient with a voracious appetite and an only slightly increased metabolic rate who gains weight, as in the instance mentioned. A gain in weight does not, therefore, negate the diagnosis.

ACTINOMYCIN-C AND SARCOMA

To the Editor:—*A girl, 11 years of age, was seen for pain in her hip joint. Radiographic examination showed a sclerosis of the upper extremity of the right femur. A biopsy showed osteogenic sarcoma, and an operation was done removing the superior third of the right femur and substituting a metallic prosthesis. Two months after the operation, the patient showed local recurrence of the neoplasm in spite of roentgen therapy. At present she has serious neoplastic cachexia and cannot be submitted to a new intervention, because of metastasis. The newspapers report a new preparation, named "actinomicina," that seems to have given good results in the therapy of tissues affected by neoplasm. I shall be very glad to know your opinion as soon as possible.* *M.D., Italy.*

Answer.—Actinomycin-C was first isolated by Dr. Selman A. Waksman; its clinical trials have been conducted almost entirely in Germany. Its chief activity appeared to be in early cases of Hodgkin's disease. It was reported to have no effect on a variety of different types of sarcomas and carcinomas. The clinical studies for this antibiotic have not been well documented, but there does not appear to be any evidence that it will be of any value in the treatment of osteogenic sarcoma.

USE OF ANTIBIOTICS IN DIFFERENT RACES

To the Editor:—*Are there any differences between the Negro race and the white race in their responses to antibiotic therapy—particularly as to efficacy, reactions, or contraindications?*

Francis D. Huber, M.D., Mount Vernon, N. Y.

Answer.—There is no evidence that there are any appreciable differences in the responses of the various races of the world to antibiotic therapy. The results have been more or less uniform with respect to efficacy and reactions in all parts of the world.

BLOOD VOLUME

To the Editor:—*I should like to know whether the blood volume in an adult changes with changes in weight. My patient is a woman who normally weighs 95 lb. (about 43 kg.). She had lost about 30 lb. (13.6 kg.) and was operated on. The question of blood volume arose in connection with the amount of blood and fluids that were required to maintain fluid and electrolyte balance. May I assume that in this patient the total blood volume had decreased from about 4,000 cc. (90 cc. per kilogram) to 2,700 cc. with her major loss of weight, or must I change the average blood volume figure of 90 cc. per kilogram to a higher one, since the patient's total potential vascular bed has not decreased?*

Lawrence Katz, M.D., Detroit.

Answer.—The blood volume may be expected to decrease with loss of weight, but there is no simple rule for calculating the change, as many factors enter into the maintenance of the volume. If the process is slow and an equilibrium has been established between intravascular and extravascular fluid, and the protein content of the blood is normal, the rule of 90 cc. per kilogram of body weight may be applied. With rapid changes in weight, the factors of water loss, fat loss, changes in the relatively fixed tissues, and maintenance or change of the original red blood cell volume, with increase or decrease in plasma volume, may influence the total volume.

RUPTURE OF CEREBRAL ANEURYSM

To the Editor:—*Please comment on the possibility of a cerebral aneurysm rupturing owing to work with an air hammer used for drilling.* *M.D., Illinois.*

Answer.—It would appear highly unlikely that any vibration caused by the use of an air hammer at some distance would be directly associated with the actual onset of rupture of an intracranial aneurysm. It may be postulated that if a person who had an intracranial aneurysm were to perform heavy physical exercise and possibly strain severely, as in holding an air hammer, enough alteration in intracranial tension to affect the thinned-out portion of an aneurysm might occur; rupture in this way might be associated with such activities. However, an exact cause-and-effect relationship would be very difficult to establish.

DIGITALIS INTOXICATION

To the Editor:—*A patient receiving digitoxin has stated that on six occasions he has had diplopia shortly after administration of the drug. He adds that his wife noted one eye was higher than the other. During the attack diplopia is so annoying that it causes him to stagger and he must cover one eye to get about. These attacks last from 5 to 10 minutes. Please advise.* *Harold H. Lowenstein, M.D., Columbia, S. C.*

Answer.—Diplopia as a result of digitalis administration has been reported, but only as a toxic manifestation and then only very rarely. There are many visual manifestations of digitalis intoxication, but the occurrence of diplopia is extremely rare. A good summary of these effects together with references may be found in an article by Gelfand (*J. A. M. A.* **147:**1231 [Nov. 24] 1951).

DUST AND A BRICKLAYER

To the Editor:—*A bricklayer, working with new firebrick, occasionally uses an air gun to chip old firebrick out of kilns 8 ft. in diameter and 20 ft. long. Could this type of work, as regards exposure to the dust, aggravate a quiescent tuberculous lesion in the lung? There is no question about the possibility of silicosis.* *M.D., Maryland.*

Answer.—Since there is no question about the possibility of silicosis in this case, the work and atmospheric conditions mentioned should have no aggravating effect on quiescent tuberculosis. As far as is known with certainty, silicon dioxide in high atmospheric concentration inhaled over a long period is the only dust that might have an aggravating effect on such a tuberculous lesion.